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TUMORS OF ENDOMETRIAL ORIGIN*

BY MARION DOUGLASS, M.D.†

THE etiology and life history of polycystic tumors resembling endometrial tissue found in the female pelvis have in recent years excited a great interest and an extensive literature has been produced. The evidence, however, which has been collected in the study of these lesions has yet to be correlated sufficiently to establish definitely the factors responsible for the development of this now frequently recognized tumor. We wish to report our observations based on the study of nine recent cases in various locations.

For many years abdominal surgeons have been seeing blood-containing ovarian tumors and have described them vaguely as corpus luteum cysts or "blood cysts" of the ovary without suspecting that they were dealing with tissue often identical in appearance and microscopic structure with the uterine mucosa. It is really remarkable that the polycystic tumors often containing blood commonly found in or adjacent to the peritoneal cavity, i.e. the cul-de-sac of Douglass, the sigmoid, umbilicus, ovaries, tubes, pelvic wall or hernial sacs, etc., were so long overlooked when we consider how frequently they are discovered now that surgeons are on the lookout for them. It is due to the exhaustive study of Sampson that the frequency and clinical importance of these tumors has been impressed upon gynecologists and that certain important principles governing the biology of these tumors have been called to our attention. It seems very probable, were the underlying factors controlling the dissemination of endometrium-like tumors throughout the pelvis thoroughly understood, that we should know much more about the histogenesis of proliferating ovarian tumors of glandular structure and their relation to carcinoma of the uterus which is sometimes associated with them, and perhaps to neoplastic disease in general. Whether these tumors are the direct descendants of the uterine endometrium by seeding through the tubes, whether they are disseminated through lymphatic or vascular channels by viable endometrial cells escaping at the time of menstruation into these channels, whether they develop from an ancestral coelomic cell or by metaplasia of the peritoneal mesothelium stimulated by an irritant factor is an interesting problem concerning which a great deal of evidence has been collected. Today, though our knowledge has increased, it seems that the explanation of the origin and identity of these tumors is not so simple as had been asserted previously, and it is likely that several factors may be involved. It seems certain that no single cause can be responsible for all tumors containing glands and stroma very frequently resembling endometrium.

Russell in 1899 described an ovary containing cysts resembling endometrium and in 1895 Cullen reported his first case of adenomyoma of the uterus and subsequently has described tumors containing endometrial tissue in many situations, not only within the peritoneal cavity but in sites quite remote, e.g., the rectus muscle, the round ligament and the umbilicus, etc.

The explanation of endometriosis of the fundus uteri by direct invasion of the uterine wall is easily understood but the occurrence of exactly similar lesions with slight variations in other areas far removed cannot be explained on the basis of a single etiological factor. Cullen described the lesions as "adenomyomata" and demonstrated histologically that the majority of these lesions consisted of diffuse myomatous tissue with isolated adenomatous developments scattered irregularly through them, these glands surrounded by a varying amount of periglandular stroma which is typically uterine in appearance. Various factors have added to the difficulty of identifying these tumors from the standpoint of etiology. The tendency to consider "adenomyomata" as a variety of uterine fibroids and endometrial tumors in other regions as something quite distinct is confusing. This purely artificial distinction still appears in text books of gynecology. As emphasized by Sampson, these tumors excite "a reaction" in the invaded tissue consisting of fibromyomatous tissue. The stroma surrounding the glands when present probably represents metaplastic change of connective tissue cells also. As is known, dense adhesions containing glandlike structures are found adjacent to the tumors, a typical example of which we shall demonstrate. (fig. 18.) The implantation theory of Sampson presumably must be accepted in certain cases, if for no other reason than that of the frequency of these tumors in the form of scar "implanta-

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†For record and address of author see "This Week's Issue," page 339.

tions'' after operations on the uterus. After having been universally accepted, Sampson's position is now attacked on the ground that it cannot account for the origin of all cases and the point seems rather how few for which it is responsible. As pointed out by Novak, endometriomata have been found in scars when the uterus has not been opened and there has been no manipulation of the uterus. These have been following appendectomy or oöphorectomy. Sampson, however, only suggests the implantation theory as an explanation for the origin of peritoneal lesions and the conditions resulting from them.

The more important of the many theories which have been advanced to explain endometriosis in its varying locations are:

1. Direct implantation of living endometrial cells or of tubal mucosa as tissue fragments escaping at menstruation washed by menstrual blood from the tubal ostia into the peritoneal cavity. Pressure upon the uterus in the course of bimanual examination may facilitate this leakage. Implantation occurs on the surface of the ovary and hemorrhagic cysts develop which in turn perforate forming secondary peritoneal implantations or peritoneal implantations occur primarily. The degree of metaplasia sometimes found in the new locations is explained on the ground that the ovary acted as an incubator or intermediate host and ''imparted a greater virulence to the epithelial cells developing in it.'' This is exactly analogous to seeding of carcinoma throughout the peritoneum in implantation metatases from a malignant papillary cystadenoma of the ovary with papillary projections which break off and become implanted.

2. The serosal theory of Lockyer, Ivanoff and Meyer suggests that metaplasia of peritoneal mesothelium results in the production of a histologically typical uterine mucosa. Lockyer in discussing ''adenomyoma'' of the round ligament explains also the origin of the varying amounts of typical uterine stroma. ''The connective tissue which surrounds the epithelial inclusions can be excited to hyperplasia which causes it to assume the characteristic histologic features of the stroma of the uterine mucosa''.

3. The dissemination of endometrial tissue by lymphatics and veins has been suggested (Sampson, Halban) and the attempt made to show migrating endometrial cell masses in lymph channels, which are freed at menstrual periods. This has not been conclusively established but upon theoretical grounds would explain the occurrence of lesions of the class of inguinal endometriosis.

4. The theory that endometriomata arise in congenitally misplaced portions of the Wolffian or Muellerian duct.

Recently Novak has suggested that the stimulation of primordial coelomic epithelium of the urogenital folds which alike produces ovarian germinal epithelium and the follicular apparatus, and which by invagination also forms Mueller's duct may be the etiological factor. As he suggests, the uterine mucosa and the endosalpinx are merely modifications of peritoneum and that inasmuch as the factors governing regional differentation of embryonic layers are not well understood except that they are probably due to hormone influence it is certainly not inconceivable that under proper conditions the still potent germinal epithelial cell may undergo a further metamorphosis toward typical uterine mucosa. Additional support for this view lies in the fact that (Novak) one may see in ovarian endometriosis all varying stages through which uterine epithelium goes, i.e. simple glandular structures resembling tubal or uterine mucosa, stroma varying from complete absence to profuse thick interglandular layers and with or without evidence of a simultaneous menstrual reaction, all assembled in the same tumor. In other words, the mutation or evolution toward mature uterine glands and stroma varies in its completeness. The endometrial cysts developing in the ovary or elsewhere which do not menstruate are accounted for as being similar to the basalis or deep layer of the endometrium. This portion, i.e. the basal layer, does not undergo a typical menstrual cyclic change and is analogous to the condition known as hyperplasia of the endometrium which is characterized histologically by increase in the relative density of the stroma and the ''Swiss cheese'' pattern of glands which are round, not tortuous, and vary tremendously in size. Were the age of the glands the only distinguishing feature I cannot conceive how menstruation changes would be absent entirely from such a number of endometrial tumors. This variation in the types of glands found in ovarian endometriosis is evidence against the direct implantation of mature though possibly dying uterine cells, i.e. mucosa extruded at the menstrual periods through the tubal orifices. It would seem that implantation of adult uterine mucosa should produce constant types of endometrial tumors and the only variation should be in the relative size of glands or possibly in the presence or absence of the menstrual cyclic phase, rather than in entirely changed morphology as is frequently seen. Examination of these lesions, whether they be in the ovary or on the peritoneal surface, in the inguinal canal in relationship to the round ligament, in the umbilicus or as implantations (?) in abdominal cicatrices shows that the most marked differences in morphology, amount of stroma and physiological reaction, i.e. no trace of blood or menstrual reaction (bleeding, desquamation, etc.) occurs in many tumors. It seems remarkable that ectopic uterine glands arising from mature endometrial cell implants should not react to the menstrual stimulus in any way.

A number of facts must be noted in the con-

sideration of the part which may be played by tubal dissemination in the production of endometrial lesions in the peritoneal cavity. The lesions occur only in women and only during their menstrual life. The fact that the tubes are usually patent though the pelvis may be filled with adhesions suggests that the lesions are at least uncommon in women whose tubes are sealed off. The fact that the lateral and under surfaces of the ovary frequently show lesions can be construed as suggestive evidence of tubal transmission of uterine epithelium, these areas being most immediately adjacent to the tubal ostia. The frequent occurrence, however, or regurgitation of menstrual blood into the peritoneal cavity has been extremely difficult to accept as a fact. It must be admitted that it occurs but relatively infrequently in our observation. The occurrence of recognizable gross blood in the pelvis obviously coming from the tubal ostium is a most unusual finding despite the fact that curettage and manipulation of the uterus in bimanual examination in our clinic almost invariably precedes laparotomy. In addition, as emphasized by Novak, the sites of apparent predilection for endometrial implants are so often at points far distant from the tubal ends. The argument also that endometriosis is practically always an intra-pelvic disease may be construed as evidence against free dissemination of cellular particles through the tubes, because when carcinoma of the pelvis is disseminated it spreads throughout the abdomen, and studs the upper abdomen as generously as it does the lower quadrants.

To recapitulate briefly, we have then pelvic tumors now being recognized in large numbers containing cavities or cystic areas some of which contain blood. These are lined with epithelium which in many cases is microscopically identical with uterine mucosa. Are these tumors then the results of mature uterine epithelium scattered broadcast through the tubes into the peritoneal cavity? Or must we assume a remarkable metaplasia under an unknown stimulus which is suggested by the extreme variety in the morphology of these gland forms and their concomitant stroma. It seems probable that the solution will not be arrived at merely by the repetition and emphasizing of evidence in the form of histopathologic findings which are calculated to prove or disprove any of the given theories which have been put before us. We wish to comment upon nine cases which have recently come under our observation, some features of which are not in harmony with direct transtubal dissemination.

Case 1.

Mrs. E. F. 38. No. 16646.

The patient came into the hospital complaining of a lump of three years duration at the umbilicus. She had no subjective symptoms until about eighteen months ago, when the lump started to increase in size, and was occasionally painful when she stooped over or coughed. The menstrual history was normal. She had had no pregnancies. The tumor had no relationship to menstruation.

Examination: The abdomen was scaphoid and there were no scars. At the umbilicus there was a firmly fixed mass about the size of a walnut, moderately tender, with no evidence of inflammation or discoloration.

FIG. 1. Microphotograph × 100. Case 1. Section was from the umbilical tumor. The glands vary in size, remarkably resembling in this irregularity the lesion of hyperplasia of the endometrium. The stroma is typical and well developed. There is no evidence of menstrual rhythm or of "chocolate material" (old blood) in the glands.

Operation: A transverse incision was made above the tumor and it was excised with the umbilicus which it had partly replaced. The defect in the abdominal wall was repaired by a transverse suture overlapping the fascia.

Pathological Report: Examination showed a tumor well encapsulated which contained many fibrous trabeculae, grossly, and a number of areas of cystic degeneration and a few small areas of hemorrhage.

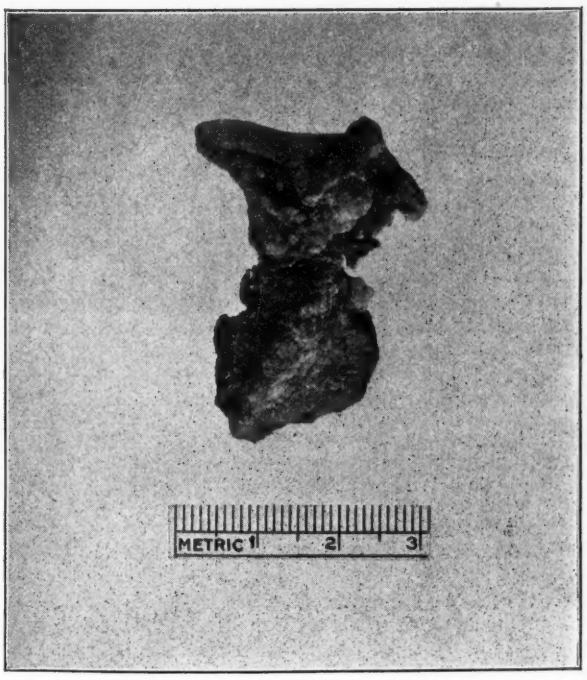

FIG. 2. Case 1. The umbilical tumor containing the umbilicus and the underlying endometrial tumor. It is obviously difficult to explain these neoplasms in the region of the umbilicus on the ground of tubal dissemination. The tumor never enlarged or became sore at menstrual periods. Gradual increase in size was the only symptom of importance.

Histological Report: Section shows enlarged irregular glands situated in a loose edematous stroma. There is a markedly loose irregular connective tissue stroma in which there are newly formed blood vessels and foci of lymphocytes. The glands contain no blood. There is no evidence of menstrual reaction. The amount of stroma varies from complete absence of a very slight periglandular development to well marked typical uterine stroma. The epithelial lining is low columnar in type. Figure one shows average glandular type with well developed stroma, lumina being free of blood. This tumor of the umbilicus had no relationship to the menstrual cycle, i.e. periodic pain with enlargement nor was there accumulation of blood. Morphologically it is unmistakably endometrial in type.

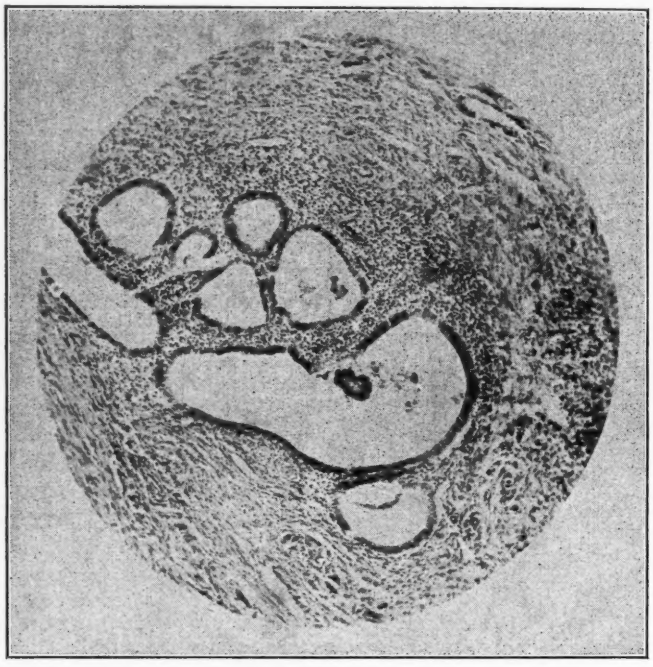

FIG. 3. Case 2. Section through typical "adenomyoma" of the recto-vaginal septum. There is blood in the glands in small amounts but the tumor is definitely not in the menstrual phase. The patient was menstruating. There were no cystic striations in the ovaries or "implants" in the pelvis. The peritoneal surface of the cul-de-sac was perfectly uninvolved, but through it the tumor mass could be palpated.

CASE 2.

Mrs. E. P. 47. No. 12396.

The patient came into the hospital on November 18, 1924, complaining of abdominal pain and dysmenorrhea.

Examination: Revealed a hypertrophied cervix, and a nodular myomatous uterus. No lateral pathology was made out. In the recto-vaginal septum was a nodular mass 3 cm. in diameter. Through the speculum it was seen to be black, which at once suggested adenomyoma of the recto-vaginal septum. The periods were regular and profuse, with severe pain preceding the periods.

Operation: Both tubes and ovaries were apparently normal and a panhysterectomy was performed with the vagina opened widely. The vaginal mucous membrane was incised and the tumor enucleated without opening the rectal mucosa.

Pathological Report: Showed an irregular nodular myomatous uterus. The endometrium was essentially normal in appearance.

Histological Report: The tumor is composed of fibroid myomatous tissue in which are numerous gland spaces imbedded in uterine stroma. There is blood in practically all the glands and there is marked variation in the amount of the periglandular stroma, the caliber of the glands and the character and height of the lining epithelium. Certain areas show the typical "Swiss cheese" design of the endometrial hyperplasia. The intact vaginal mucosa is seen over the lesion. (fig. 3-4.)

The fact that the ovaries were normal and that there were no endometrial implants anywhere in the peritoneal cavity suggests the assumption of an origin for this tumor other than tubal dissemination.

CASE 3.

Mrs. E. F. 40. No. 14317.

The patient entered the Lakeside Hospital on February 3, 1926, complaining of pain in the right flank, dysuria and rectal tenesmus. The patient complained of severe post menstrual pain of one week's duration. Her last menstrual period was one week before admission.

Examination: Revealed a marital outlet. The cervix was in good condition. There was a small cystic mass posterior to the uterus. There was a large mass on the posterior surface of the upper border of the cervix extending back toward the rectum.

Operation: The uterus was found very immobile and the pelvis was filled with adhesions. The tubes, however, were patent. There were multiple fibroid nodules upon the uterus. Posterior to the uterus there was a mass adherent to the right uterosacral ligament which was also adherent to the rectum. In freeing the mass which was adherent to the uterosacral ligament and rectum the ureter was severed. The bladder was mobilized and a panhysterectomy was done. The ureter was repaired by invaginating the upper end into the lower. The wall of the sigmoid was injured. The lumen of the bowel was not opened. Vaginal drainage was established on account of the injury to the ureter.

Pathological Report: The uterus was symmetrical there being a few isolated nodules on the anterior wall. The cervix contained Nabothian follicles. On the posterior lip there were small cystic cavities containing blood. The mass containing cysts attached to the uterosacral ligament was a circumscribed tumor, although it was not encapsulated. The stroma was firmer than normal and was fibrotic. The tubes were normal. In the right ovary was a single cyst the size of a lemon which had been ruptured. The left ovary revealed no abnormalities.

Histological Report: (fig. 5.) (Uterosacral ligament tumor.) There are numerous blood-containing glandular structures surrounded by a varying amount of stroma. The epithelium is not tufted and is moderately high columnar in character. The endometrial reaction represents a resting stage. The uterine mucosa is definitely premenstrual.

Section 2.—Ovaries: (fig. 6.) Section shows glands of distinct endometrial type. In this ovary there are areas of adenomatous tissue on the surface of the ovary and apparently invading the ovary or if they primarily arise in the ovary they are perforating, being discharged from the surface. Some of the glands show typical stroma and contain blood, others show no blood. It is interesting in this case that the peritoneum of the cul-de-sac shows no intraperitoneal growth and the rectovaginal septum endometrioma appears to have no obvious contact with the peritoneal cavity, apparently being isolated from it by a wall of intact peritoneum. It does not seem likely that cystic structures of such different characters had a common origin.

CASE 4.

Mrs. A. B. 42. No. 5027 B.

The patient entered the hospital March 10, 1925, complaining of pain in the right side and the perineum, and leucorrhea.

Examination: Revealed a greatly enlarged and hypertrophied cervix and the uterus was fixed and enlarged. The floor of the pelvis seemed to be indurated. Posterior to the cervix there was a firm area of induration, two or three small dark cysts showing through the vaginal mucosa.

Operation: The vaginal mucosa was reflected from the tumor and the tumor in the posterior fornix of the vagina, 3 cm. in diameter, was excised. (fig. 8.) The patient would not give permission for laparotomy.

Histological Report: (fig. 7.) The mass consists of an irregular fibrous tumor covered on one aspect with vaginal mucosa. There are dark cystic blebs all through the tumor diffusely. The tumor measures 3 cm. in diameter roughly, in its long axis.

The microscopic section consists of numerous glands containing blood, lined with moderately high columnar epithelium, surrounded by a varying amount of periglandular stroma, typically uterine in appearance. There is blood in the lumina of the glands. There is slight evidence of menstrual activity. (fig. 7-8.)

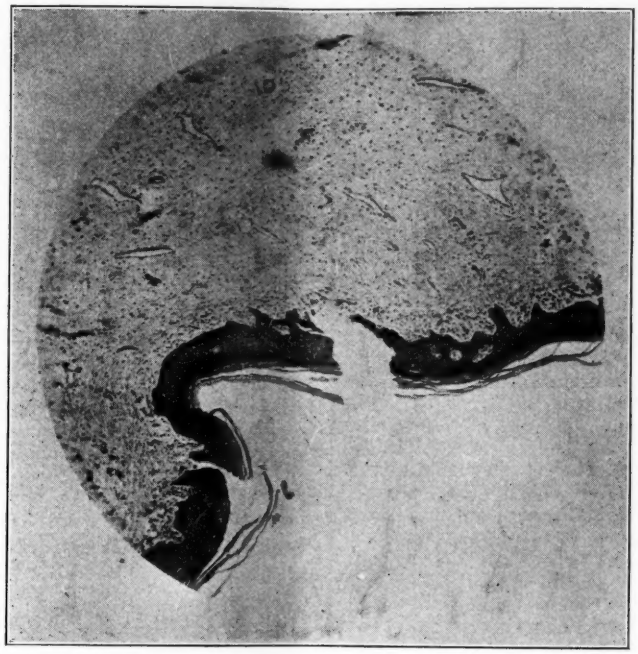

FIG. 4. Case 2. Section showing intact vagina over the tumor mass. The tumor was removed from the rectal wall without perforating it. The peritoneum of the cul-de-sac was dissected intact from the tumor. Examination of the peritoneum of the pelvis showed no endometrial lesions and the peritoneum was intact over the tumor. Transtubal dissemination was probably not a factor in the etiology of this tumor.

CASE 5.

Mrs. E. C. 42. No. 16761.

The patient came into the hospital on July 31, 1927, complaining of menorrhagia, dysmenorrhea, backache and loss of 25 lb. in one year.

Examination: Revealed a hypertrophied and lacerated cervix. The uterus was anterior and freely movable. The left ovary was cystic and enlarged. There were small blood-containing structures, the largest of which was approximately the size of a pea, on the vesical peritoneum and there was a chocolate colored bleb which was seen grossly to be a small blood-containing follicle. The left ovary contained a typical dermoid cyst. The right ovary was apparently normal and was not removed. The tubes were patent.

Operation: Panhysterectomy, left oöphorectomy, perineorrhaphy and excision of vesical tumor, were done.

The patient was menstruating.

Histological Report: On section of the small hemorrhagic fibrous tumor excised from the peritoneum of the bladder there are found to be multiple blood-containing follicles. In rather loose fibrous stroma containing many new-formed blood vessels there are found well defined glandular structures

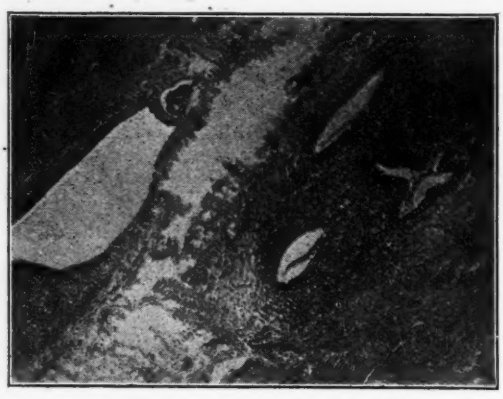

FIG. 5. Microphotograph × 100. Case 3. Tumor in rectovaginal septum. The section shows a varying amount of stroma surrounding many of the glands. There is no evidence of any participation in the menstrual cycle although menstruation was due in one week, and the uterine curettings show marked premenstrual activity.

suggesting endometrial origin. The surrounding stroma, however, being extremely rudimentary. Along one wall of the cyst which contains blood and cellular debris there is well marked tufting. The epithelium is low columnar. There is practically total absence of stroma. Diagnosis: Desquamation of the epithelial lining of the cyst without subepithelial hematoma. The left ovary (fig. 9) contains a small area of small cystic cavities which are not blood-containing. These are found to consist of isolated glands. Histologically there is no evidence of reaction typical of menstruation. This endometriosis seems very close to the surface, "invading" the ovary. The atypical appearance of these cells suggests to me inclusion of the peritoneal meso-

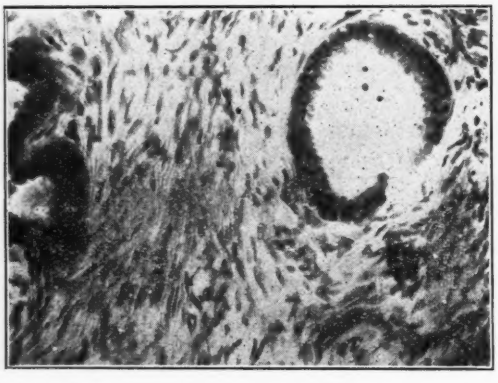

FIG. 6. Microphotograph × 430. Case 3. Ovary: The section shows glands of the endometrial type without menstrual reaction and without stroma. The growth in the rectovaginal septum if derived by seeding into the cul-de-sac from the ovarian endometrium has been covered by intact peritoneum and isolated from the peritoneal cavity.

thelium as their resemblance to mature uterine mucosa is not particularly striking. (figs. 9, 10, 11, 12.)

CASE 6.

Mrs. E. S. 49. No. 16224.

The patient came into The Lakeside Hospital on March 20, 1927, complaining of weakness, irregular bleeding of approximately one year's duration and pruritis ani. .

Past history is essentially negative until about five years ago when her periods began to become irregular and she was bleeding sometimes every two weeks, of irregular duration. She also complained of rather marked weakness.

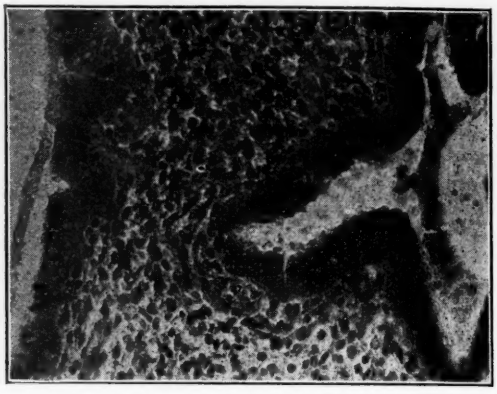

FIG. 7. Microphotograph × 430. Case 4. Section is from the tumor in the rectovaginal septum. This patient refused laparotomy. Bimanual examination suggested diffuse intrapelvic endometriosis. The glands contained blood and the history suggested association with the menstrual cycle.

Physical examination and laboratory findings are within normal limits except for moderate secondary anemia.

Pelvic examination revealed a moderately relaxed outlet. The cervix was in good condition. The uterus was enlarged symmetrically three or four times normal size. No lateral masses were palpated.

At laparotomy the tumor consisted of a uterine fibroid symmetrical in shape and as large as a child's head.

Pathological Report: Section of the uterus showed

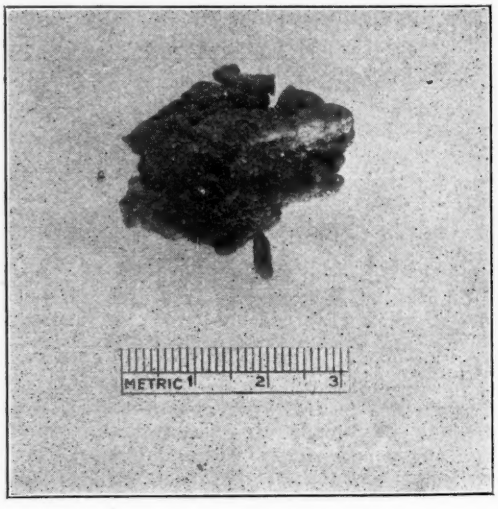

FIG. 8. Case 4. Typical adenomyoma of the rectovaginal septum.

the whorled, pinkish gray white, homogeneous appearance characteristic of myoma uteri. There were a few spots suggestive of adenomyoma. Myomatous tissue had replaced almost the entire uterus. The ovaries and tubes were senile.

Histological Report: The tumor was composed of interlacing bundles of smooth muscle cells, uniform in size, shape and quality. There was also a small number of glands of irregular sizes. Blood was

present in the cavities of some of these which were markedly dilated. (fig. 13.)

Section containing these ectopic glands resembled uterine endometrium and uterine stroma at a distance of 4-5 cm. from the endometrial surface.

Examination of a portion of the wall of one of these greatly dilated intramural glands shows a cavity distended with blood, the epithelium of which

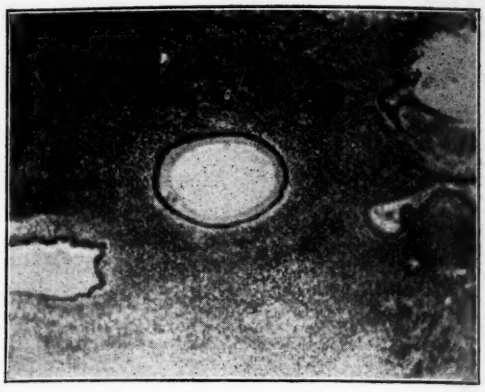

FIG. 9. Microphotograph × 100. Case 5. The section is from a left ovary which contained a small dermoid. The non-dermoid portion of the ovary contained these gland-like structures which show no typical menstrual reaction although the patient is menstruating (third day). The appearance of these on the surface as well as beneath it suggests their origin there and not as implantations.

is flattened markedly, and is surrounded by a thin layer of typical stroma blending off into myomatous tissue. (fig. 13.)

Implantation of endometrium-like lesions in abdominal scars is a most interesting finding and as a piece of evidence suggests the plausibility of transtubal dissemination of endometrium. We have observed three cases which have been reported in detail elsewhere.* The lesions, which occurred in abdominal scars, followed re-

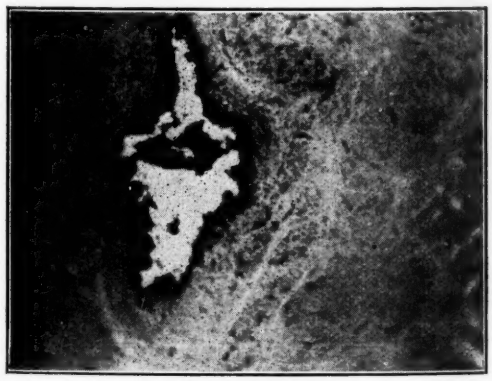

FIG. 10. Microphotograph × 100. Case 5. Shows a "menstruating" cavity in one of the blebs from the vesical peritoneum. There is almost complete absence of stroma but there is a menstrual-like mucosa reaction.

spectively, caesarean section, salpingectomy, and through and through fixation of the uterus to the abdominal wall. See figures 14, 15, and 16, cases 7, 8, and 9.

Endometrial tumors of the pelvis, especially with extensive involvement of the ovaries, are often the cause of sterility, acquired dysmenorrhea and pelvic pain which may be protean in its symptomatic manifestations. It is often acute in character but may be dull and dragging, of the type so often associated with extensive pelvic adhesions which are found with chronic salpingitis of long-standing. The uterus is usually adherent to surrounding structures though

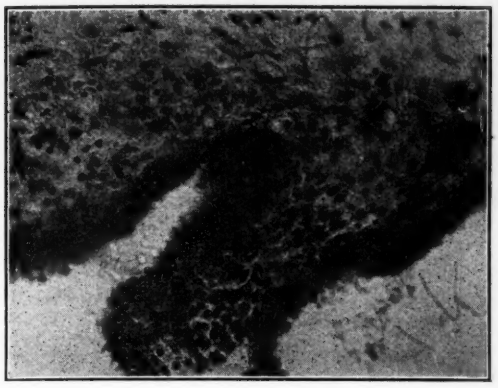

FIG. 11. Microphotograph × 430. Case 5. The edge of a blood-containing gland showing slight development of stroma in the cystic tumor from the vesical peritoneum.

the tubes are open (Sampson) and the pelvis is filled usually with diffuse adhesions, the adhesions themselves containing often the characteristic gland structures.

Cullen and Ewing are not in accord with all of Sampson's views and Ewing points out that misplaced epithelium may assume the appearance of endometrium. This applies particularly to gland-like inclusions in the region of the appendix which have been identified as endometrial in origin. The presence of intact peritoneum over lesions suggests that they are de-

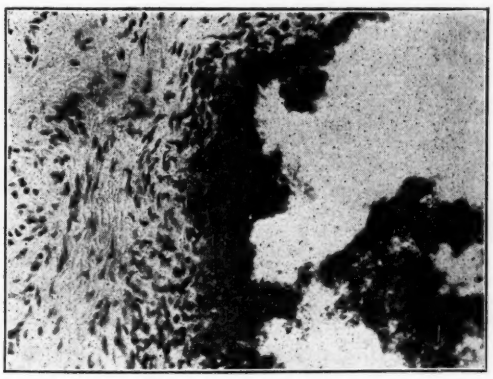

FIG. 12. Microphotograph × 430. Case 5. The edge of the gland shown in figure ten, showing a menstrual response. There is almost complete absence of stroma. The lack of conformity in the behavior of these tumors during menstruation suggests strongly an origin other than transtubal dissemination.

rived from embryonic structures. Ewing also emphasizes the necessity of a history of violence to the tubal or uterine mucosa to account for the transplants as well as the advantage of stroma in the certain identification of these tumors and, to go a step further, cautions against the tendency to interpret "simple epithelial rests in

*In press: The Journal of the American Medical Association.

pelvis as endometrium even if they have endometrial stroma".

The wealth of embryonic sources for inclusions, i.e. Müllerian duct, Wolffian duct, postanal gut, neurenteric canal, parovarium and urachus, makes the origin from primordial structures ex-

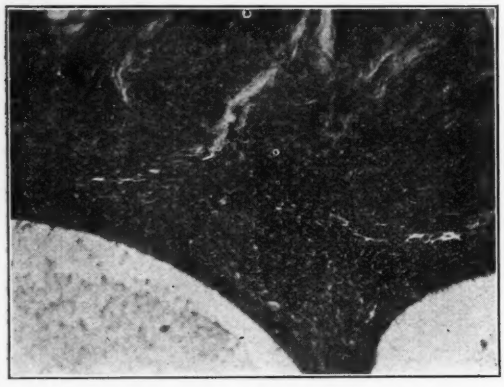

FIG. 13. Microphotograph × 430. Case 6. The section shows the wall of an adenoma filled with blood. The stroma is thinned out but well developed and the epithelium is flattened. This adenomyoma of Cullen represents direct invasion endometriosis. The uterine mucosa itself was in a resting stage. There were no cystic lesions in the ovaries.

tremely probable at least in certain of these tumors.

Case two in our series presents a rectovaginal tumor covered by intact vaginal mucosa, and peritoneum with grossly normal tubes and ovaries. The question of the viability of cells of the endometrium which are cast off at the time of menstruation is now receiving attention and contradictory evidence has been presented.

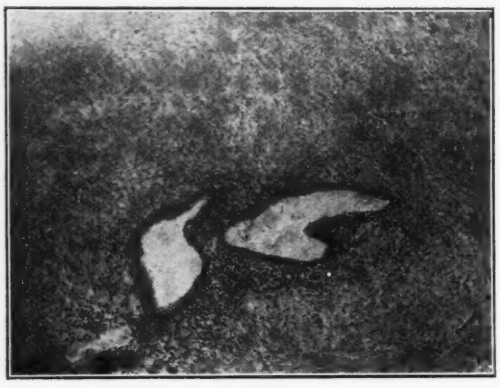

FIG. 14. Microphotograph × 100. Case 7. The section shows gland spaces containing blood. There is evidence of response to menstrual stimuli. The patient gave a definite history of increase in size of the tumor and also of its becoming painful at menstrual periods. Through and through fixation of the uterus to the abdominal wall with silkworm gut sutures was performed eight years before. Direct implantation is an almost inescapable conclusion in this instance.

Jacobson's experiments, though extremely valuable, cannot be accepted as conclusive for human beings. This question suggests again the advisability of diagnostic curettage in cases of malignancy of the uterus. Early diagnosis is of extreme importance and by this means only can an early and sure diagnosis be made. Norris states that better end results were obtained in a series of uterine carcinoma which were subjected to diagnostic curettage than a series which were not.

The important feature in the treatment of ectopic endometrial tumors which has been em-

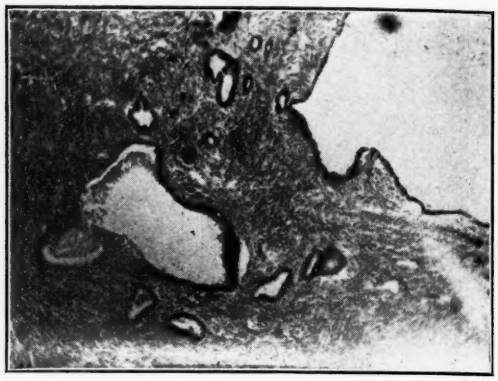

FIG. 15. Microphotograph × 100. Case 8. The section shows bizarre gland-like spaces with little or no stroma. The uterus contained typical resting endometrium. The gland size and stroma variation is marked.

phasized by Graves is the regression of the tumor and amelioration of symptoms following bilateral oöphorectomy, for example, in obstruction by endometriosis of the sigmoid, bilateral oöphorectomy would be indicated because the tumor may regress to such a degree that the sigmoid would become patent and a colostomy made previously might be closed. The patient thus would escape resection with its attendant dangers. Cullen, however, has presented evidence showing that oöphorectomy is not always sufficient.

We have had two urinary fistulae, (uretero-

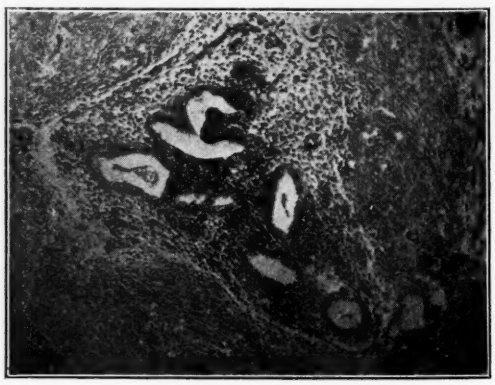

FIG. 16. Microphotograph × 100. Case 9. The section shows glands containing blood in a fairly abundant stroma. The last menstrual period began ten days before.

vaginal and vesico-rectal) develop in the last two years following panhysterectomy and both of these cases had well marked pelvic endometriosis. This attracted our attention because no other cases of urinary fistula developed in some hundreds of hysterectomies. This is especially interesting to us in the light of Keene's cases of invasion of the bladder by perforating

ovarian cysts, reported in 1925. Unfortunately we have been unable to persuade either of our patients to submit to cystoscopy. The tendency of endometriomata to invade and rupture suggests that this may have accounted for the vesical fistulae rather than trauma to the vesical wall at operation. Bilateral oöphorectomy without resection of the bladder tumor resulted in symptomatic cure of Keene's patients.

SUMMARY

It is not surprising that Sampson's theory of the origin of endometrial tumors situated in or adjacent to the female pelvis has not received universal acceptance although it is based upon excellent work and extremely careful observation. Certain biological characteristics of the tumor and histological findings tend to suggest that many of these neoplasms do not owe

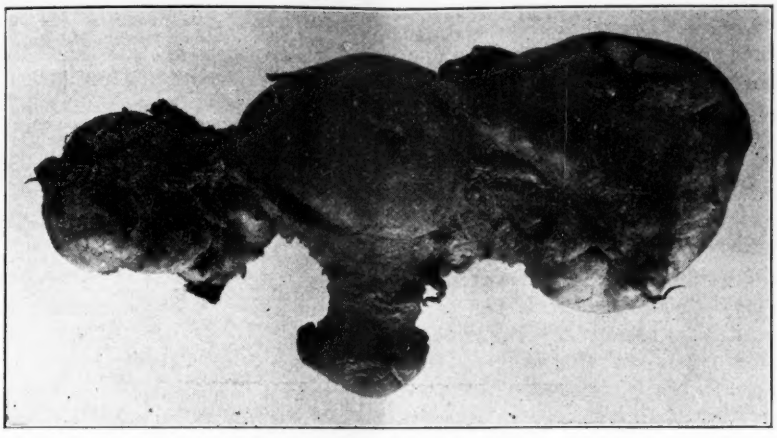

FIG. 17. Photograph of anterior surface of uterus, tubes and ovaries removed at operation. Both tubes are patent and the uterus, rectum and ovaries are extremely adherent. The uterus showed no abnormality.

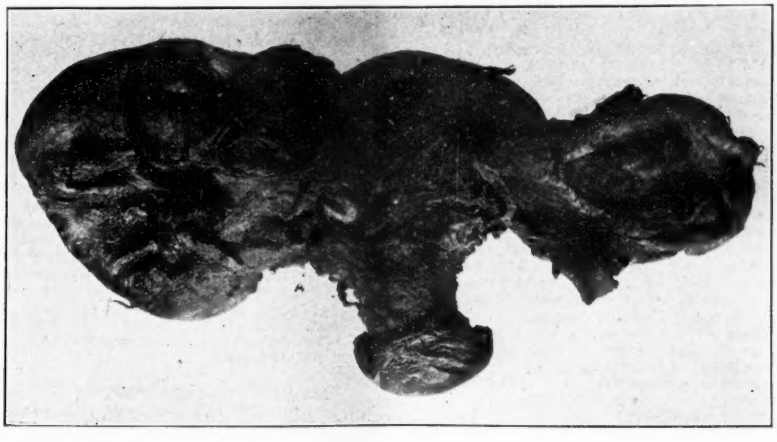

FIG. 18. Posterior view of uterus showing multiple adhesions with large bilateral hemorrhagic cystomata replacing the ovaries. Section through the adhesions shows typical endometrial tissue.

Scar implantation seems a fairly definite entity caused by direct deposition of endometrial cells in the wound. In our cases either the uterus was opened in caesarean section, or through and through abdominal fixation of the uterus or salpingectomy (removing a wedge of uterine cornu) was performed, any of which gave opportunity for wound contamination with endometrial cells directly. Such lesions, however, have followed appendectomy which admits of no such simple explanation and its very rarity following caesarean section suggests the possibility of other factors being at least partially responsible.

their development to transtubal dissemination of uterine mucosa cast off at the time of menstruation. The relative infrequency in our experience of "regurgitation" of menstrual blood spilled into the pelvis at menstruation through the tubes seems a most cogent argument against tubal dissemination even though variations in the size of the tubal lumen both from congenital anomaly and due to peristalsis must be admitted. Lesions occurring in sites covered by intact peritoneum with no hemorrhagic ovarian cysts seem difficult to account for except by an embryonic origin, viz. round ligament, umbilical and rectovaginal septum tumors.

It is difficult to interpret properly the extreme variation in the cyclic menstrual reaction seen in glands, the contrasts in the amount of stromal development and difference in morphology of gland cells, but at least the occurrence of such differences in nature and structure in the same tumor does not point to a common mature ancestral cell or group of such cells. It seems much more plausible that only immature embryonal cells capable of passing through diverse neoplastic changes could father tumors showing such varying histologic structure.

The occurrence of the characteristic endometrial lesion in wounds where the uterus has been opened suggests that transplantation and growth of the cells of uterine mucosa is possible but throws no light upon the relative viability of menstrual endometrium, and whether or not it is regurgitated at menstrual periods through the tubes with any degree of frequency.

It seems probable that complete understanding of the etiology of these lesions has not yet been reached and at present several modes of origin, depending upon the site and characteristics of the lesion, must be accepted tentatively as causing their development.

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STUDIES IN ASTHMA*

III. The Use of Vaccines in Asthma and in "Colds"

BY FRANCES M. RACKEMANN, M.D., AND MARGARET A. SCULLY, B.S.†

THERE is little question but that treatment with vaccines will relieve patients with asthma. The reports of G. T. Brown[1], W. S. Thomas[2], J. A. Clarke[3] and of our own laboratory[4] in this country, of VanLeeuwen[5] and of Enklaar[6] in Holland and of Danysz[7] in France present ample confirmation. There is, however, always question about the degree and the permanency of the relief in the individual case and still greater question about the mechanism of the vaccine action.

Vaccines are able to produce a specific active

*The expenses of this investigation were met from an anonymous donation known as the "M. G. H. Asthma Fund."

From the Anaphylaxis Clinic of the Massachusetts General Hospital.

Read before the combined meeting of the Suffolk District Medical Society and the Boston Medical Library, on March 28, 1928.

†For records and addresses of authors see "This Week's Issue," page 339.

immunity against certain organisms and thus may be expected to prevent the secondary infection in asthma. But we know that vaccines, like many other agents, can produce a number of non-specific effects. For example: in some beautiful experiments, recently published, George Mackenzie[8] has shown that the treatment of rabbits with a new antigen could cause a reawakening of the immunity which the same animal had once developed and then lost after previous treatment with a different antigen.

The chief questions for us to decide are whether vaccines really do good in asthma and whether the effect of vaccines is specific or non-specific—which means, in practice, shall we insist on having autogenous vaccines or are stock vaccines "just as good"?

During the five years since our former report[4], vaccines have been used extensively in asthma. At the same time, similar and often the same vaccines have been injected to a group of individuals applying for protection against recurrent "colds". It was thought that, if the results in these non-asthmatic patients were different in any way, the analysis of this difference would help in a study of the mechanism of the action of vaccines in asthma.

The methods of making vaccines have been quite the same as previously described[4] except for one point. In the earlier work, the organisms were obtained by centrifuging and washing broth cultures three times with salt solution. Since then, the technic has been greatly simplified by growing the organisms in pure culture on a solid medium—usually human blood agar—and removing the growth in each tube by adding about 10 cc of salt solution, containing 0.5% phenol, and then gently scraping off the growth into the fluid with a bent platinum wire.

The original suspension is the final suspension. Washing is omitted and so the possibility of losing antigenic substances attached to the surface of the cell, or secreted into a fluid medium by the cell, is avoided. The presence of substances dissolved from the medium is not excluded, but has been considered unimportant.

Frequently two, and occasionally three, different vaccines from each sputum are made and used at the same time, injecting the doses in different places and regulating the dose of each one independently of the other, according to the local reaction.

In 1923, one of us with Miss Graham[4] found that good results following vaccine treatment occurred in those patients in whom each dose was followed by a degree of local reaction, consisting of redness, swelling and heat at the site of inoculation. Indeed, where the vaccine produced a local reaction, a "good result" occurred in all but six of the seventy-nine such cases. It was also noted that stock vaccines, made from various organisms, frequently produced as good results as autogenous vaccines—provided only that they too caused a local reaction. In view of these previous observations, we have concluded that the production of a definite local reaction was essential to successful results, and we have felt that while we might not achieve success in the presence of this local reaction, our doses of vaccine would not do much for the patient without it. Consequently, we have tried hard to produce a local reaction either by increasing the dose, or, if that was not effective, by changing the kind of vaccine. Hence, as the treatment goes on, one or more vaccines may be eliminated and another autogenous, or even a stock, vaccine substituted, if necessary. In no case do we mix the vaccines from different kinds of organisms together. To do so might mean diluting one vaccine, which was active, with another vaccine, to which the patient would give little response.

General reactions, with malaise, headache or fever, have occurred occasionally after the vaccine doses, but we have not tried to produce them. On the contrary, when they occurred, we have considered that the preceding dose of vaccine was too large, whether it brought about a local reaction or not. This is important because, in many minds, the term "non-specific treatment" is associated with the idea of prostration, high fever and chills. Focal reactions, consisting of an increase in the bronchitis and asthma, or an increase in "cold" symptoms, have likewise been seen occasionally, and also indicate an overdosage. We have tried not to use vaccines during the acute stage of a "cold" or in the presence of fever.

VACCINES IN ASTHMA

We have used vaccines in the treatment of 346 patients with asthma. Of the 307 adults, the results were good in 238, or 74%, and poor in 26%. In the 39 children, however, the results were good in all cases. These attractive figures refer to immediate results following a single course of treatment, rather than to a more profound effect upon the general course of the asthma. Occasionally, however, the results have been more permanent, but in a recent study of our "cured" cases[9], we found that vaccines played an important part in the "cure" in only 8 of 213 cases. Do these results help in a study of the mechanism of the vaccine action?

The series of cases includes a number of patients who have been followed for several years, and whose treatment has been carried out in fairly definite courses. It was thought that a comparative study of the results following soon after each course would give us an idea of the relative merits of the different vaccines used, when the asthmatic patient with his many uncontrollable factors was always the same individual. This smaller series includes 49 patients, most of whom have been classified[9] in the "bacterial" and "miscellaneous" groups of asthma. Most of them had been treated for three years, or more, with new courses of vaccines in each fall and winter. (See Table I.)

In 23 of the 49 patients, the treatment, from year to year, was the *same* type of vaccine,

whether stock or autogenous. In these patients, the result of one course of treatment was quite like the result of another, as might be expected. It is noteworthy that in none of the patients with asthma did similar treatment produce different results.

In the 26 patients who had *different* vaccines in each course of treatment, the results were, nevertheless, quite the same in nine, six of whom have been greatly improved and three moderately improved by each course of treatment. This observation is important. It indicates that the effect of vaccines on these particular patients is non-specific, since no one vaccine is of greater value than any other in producing the results.

Table II shows the varieties of vaccine used in six of these patients. To illustrate:

O. J. A man of 38 was markedly improved in the first year when he received doses of his own staphylococcus and his own green streptococcus vaccines. He did quite as well during the next four years when he was given doses of his own green streptococcus, a stock green streptococcus, a stock hemolytic streptococcus and another stock hemolytic streptococcus vaccine, respectively. And the results were again the same when a stock staphylococcus vaccine was given in the sixth year. Moderate local reactions were observed in each of the six courses of treatment.

In the same way, the results in the other five patients were always the same, regardless of the type of organism or whether the vaccines used were stock or autogenous. In the remaining three patients, who received only two courses of treatment, the results continued good although a stock green streptococcus vaccine was used instead of a stock hemolytic, a stock green instead of a stock pneumococcus, and in the third, a stock green streptococcus instead of a stock staphylococcus vaccine.

This evidence shows that the factor of specificity, in these cases, is unimportant and that the beneficial effect of the vaccines must depend upon the production of a degree of protein shock. In 17 patients, however, the several

TABLE I

REPEATED TREATMENT WITH VACCINES

Results in 49 Patients with Asthma and 46 Patients with "Colds"

		Asthma		"Colds"
SIMILAR TREATMENT				
Similar Results		23		9
Different Results		0		1
DIFFERENT TREATMENT				
Similar Results		9		20
Different Results				
Autogenous good & Stock poor	3		1	
Stock good & Autogenous poor	0		2	
Results vary with the Organism	4	17	10	18
Results depend on Other Factors	10		5	
TOTAL		49		48

courses of treatment, using different vaccines, were followed, not by similar, but by unlike results. The first three of these patients were more improved by autogenous vaccines than by stock vaccines. In another four patients, the results seemed to vary according to the organism used. For example:

A farmer of 60 received much more benefit from an autogenous hemolytic streptococcus vaccine than he did the next year from an autogenous staphylococcus vaccine, both of which produced only slight local reactions.

the dosage or by changing the vaccine, the variations in the local reactions have not been great, and have seemed to play a secondary role in the results. To study this further, we have analyzed all the local reactions together.

In a total of 142 different courses of vaccine treatment in asthmatics, the various doses in each course were followed by average local reactions of some degree in all but 12 of the courses. Although the 63 courses with excellent results (++++ and +++) had local reactions in all but 4 (94%), the 79 courses followed

TABLE II

VACCINES IN ASTHMA

6 PATIENTS TREATED FOR 3 YEARS OR MORE

Different Vaccines Used - Similar Results

Patient	Results*	Organism Used in the Several Courses			
J.G.	+++	Autog. Gr. Str.	Stock Sta. Stock Gr. Str.	Autog. Sta. Autog. Gr. Str.	Stock Sta.
T.G.	+++	Stock Hem. Str.	Stock Sta. Stock Gr. Str.	Stock Sta.	
M.A.K.	++	Stock Sta. Stock Gr. Str.	Autog. Infl.	Stock Infl.	Stock Sta. Stock Infl.
R.L.	+++	Stock Sta. Stock Hem. Str.	Autog. Sta.	Stock Sta.	
T.C.	+++	Stock Sta. Stock Pneu.	Stock Pneu.	Stock M. Gr. Str.	Stock Sta.
O.J.	+++	Autog. Sta. Autog. Gr. Str.	Autog. Gr. Str.	Stock Gr. Str.	Stock Hem. Str.

*Perfect results would be (++++).

Ten other patients were treated with several different courses of vaccines, but the different results have probably been modified by other factors and so lose their importance.

If different vaccines produce similar results, it is clear that any good effect must depend upon a non-specific action. If, however, it is true that the effect of one vaccine is better than another, this fact speaks for a degree of specificity in the vaccine action, particularly if the local reactions, produced by the doses, were similar.

Local reactions have varied somewhat according to the particular vaccine used and, on the whole, this variation has been parallel to the degree of clinical benefit, but since we have tried hard to produce local reactions, by increasing

by fair and poor results (++, +, and 0) had local reactions in all but 8 (90%). Evidently then, local reactions are not so important to the end results as was at first thought. *But* these findings have another significance. If local reactions are an index of the non-specific effect of vaccines in asthma, and if they occur with equal frequency, whether the end result is good or bad, does this not indicate that non-specific effects are only a minor significance in the whole group of cases?

PREVENTION OF "COLDS"

There is little doubt about the fact that vaccines can prevent colds in some individuals. How often does this occur, and is the effect specific or non-specific? These questions are hard

to determine when the frequency and severity of common colds vary normally within wide limits.

Our method used in making and selecting the vaccines, and in administering the treatments for colds were quite the same as those described for asthma. Whenever possible, cultures were taken from the nose and throat during a "cold". For prevention, we have usually given at least five doses of vaccine and have tried to produce definite local reactions after each dose.

Fifty-three patients were treated for one year only, but another group of 48 have been treated in several years. If we add the first year of the latter group to the former group, we have 101 patients with a first course of treatment, 56 of whom were treated with autogenous vaccines, 30 with stock vaccines and 15 with both.

In the 56 patients treated with autogenous vaccines, colds were prevented in 8 and greatly improved in 24 more—a good result in 57%. In the 30 patients treated with stock vaccines, colds were prevented in 8 and greatly improved in 17—a good result in 83%, which is a much higher figure. When both stock and autogenous vaccines were used, 11 of the 15 patients were improved—73%. Added together, the results for the 101 patients treated for colds in the first year were: colds entirely eliminated in 16% and greatly relieved in 52%—a very real improvement then in 68%. And this satisfactory figure is not exaggerated, for in many instances, follow-up letters and personal interviews have shown that the relief was real and that the increased resistance, noted the first year, frequently continued into the next year and even beyond that time.

As in the case of asthma, so here, the mechanism of vaccine in colds is best studied by analyzing a group of 48 individuals who were treated for colds in more than one year. This series can be divided into three sub-groups. (See Table I.) In 10 cases, the several courses of treatment in various years were with the same kind of vaccine, and the patients received repeated treatments with sometimes a stock staphylococcus vaccine, sometimes a stock green streptococcus vaccine and sometimes an autogenous staphylococcus vaccine. In all but one of these 10 individuals this similar treatment was followed by end results which were also similar, as expected. In 4 of them, the uniform results were very satisfactory and in the other 5, moderately successful.

The other 38 patients are more interesting. In 20 of them, the results from year to year were quite similar, in spite of such variations in treatment as stock vaccines in one year and autogenous vaccines later. In several instances, changes were made three or four times, without changing the results, and it was not possible to demonstrate that an autogenous vaccine had any better effect than a stock vaccine.

In 18 patients, the results of several different courses of treatment were different. One patient has been rid of her colds since the stock vaccines, used at first, were discarded in favor of an autogenous green streptococcus vaccine. More unexpected, however, are the results in two other patients who have been much improved since the change was the other way: that is, "shot gun" vaccines, made up in another laboratory and containing a great variety of organisms, have benefitted them much more than the pure single organism vaccine made from their own culture.

Finally, in 10 patients there is some evidence to show that a vaccine made from one organism was more effective than a vaccine made from other organisms. For example:

A girl of 15 was treated in 1925 with a stock influenza and a stock hemolytic streptococcus vaccine, with considerable local reaction, but with poor results. In the next year she received a stock hemolytic streptococcus vaccine, but with a stock green streptococcus substituted for the influenza vaccine, and with the same large reaction. This treatment was a great success.

Thus, in the prevention of colds, as in the treatment of asthma, the evidence presented is conflicting. The fact that stock vaccines have the same influence on colds as do autogenous vaccines tends to exclude the production of active immunity as an important part in the mechanism. On the other hand, the other instances in which the effect of one vaccine appears to be quite different from the effect of another would, if this be true, make us believe that the specific element was of some importance. In any case, however, the data does not indicate that one particular group of organisms, like the staphylococcus or the green streptococcus, more than any other group of organisms, is responsible for colds in any series of patients.

DISCUSSION

The conclusions reached concerning the results and the mechanism of vaccines in asthma and in "colds" are essentially the same. With the technic described, 346 patients with asthma have been treated with vaccines with good results in 74%. In the prevention of "colds", vaccines have been given to a series of 101 patients with good results in 68%. Both in asthma and in colds these results are only temporary in most cases, but they could be reproduced by repetition of the treatment and were therefore important to the patient. Both in asthma and in colds, the figures for the whole series show that stock vaccines are just as effective as autogenous vaccines and this fact shows that the effect of vaccines is non-specific.

A closer study of those patients treated from year to year shows that repeated courses of treatment with the same kind of vaccine leads to the same result. When, however, the same patient is treated in different courses with different vaccines, the results are sometimes similar, which speaks for a non-specific effect; but they are

sometimes dissimilar, when one vaccine works better than another, and this fact speaks for a degree of specificity in the vaccine action.

Neither in asthma nor in colds is it possible to show that one organism is more important than another in the cases as a whole.

We suggest that the good effects of vaccine treatment depend upon an unknown reaction which takes place when a particular vaccine is injected into a particular patient. Evidently the production of such a reaction depends upon conditions which are to some extent restricted, and to this extent the treatment would appear to be specific. Whatever the mechanism, it is the same in asthmatic as it is in non-asthmatic individuals.

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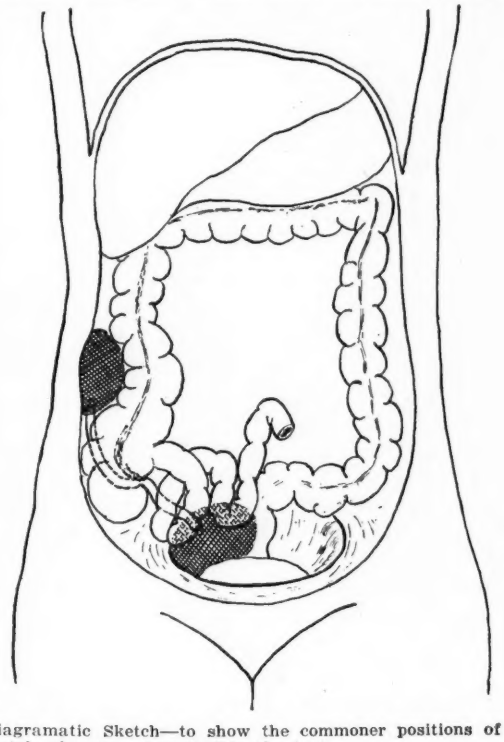
APPENDICEAL ABSCESS: TREATMENT OF THE APPENDIX*

BY JOHN HOMANS, M.D., F.A.C.S., AND JOHN H. POWERS, M.D.†

BY an appendiceal abscess is meant a suppurative process due to perforation of the appendix, firmly walled off and palpable. From such an abscess removal of the appendix is sometimes unwise and occasionally impossible. This difficulty may be due to one or both of two factors: the situation of the abscess itself, and the uncertain relation which the appendix bears to it.

The caecum‡ lies, as a rule, in the right iliac fossa, the appendix pointing upward and inward behind the ileo-caecal junction, but the remarkable variation in length and the extreme mobility of the appendix permit it, or some part of it, an astonishing range. Thus an abscess, which is usually formed in the right iliac fossa, may appear exceptionally in the right renal fossa, in the sub-hepatic or subumbilical region, or in the pelvis. Eccentric abscesses of this sort are most often found in the pelvis, usually on the right, but sometimes mesially or even on the left, and next in frequency in the right renal fossa. They may be in contact with the anterior abdominal wall or so deeply situated that a considerable area of normal peritoneal cavity must be traversed to reach them. There is, therefore, danger of spreading infection if they are laid widely open in a search for the appendix itself.

The relation of the appendix to the abscess is likewise variable. A perforation may occur at any point in its length, or the whole organ may become gangrenous. Thus the larger part of the appendix may remain outside the abscess, may be embedded in its wall, or may lie within it. In the last case, the gangrenous organ can usually be discovered and removed; in the second case, it can only occasionally be found, and in the first, it can not be discovered without going outside the infected field. In any event, removal of the appendix requires a considerable incision which must inevitably become contaminated, much to the detriment of the wound in the abdominal wall.



Diagramatic Sketch—to show the commoner positions of the eccentric abscesses described in the text.

As a rule, when an abscess has been opened, a search is made for the appendix, which may well be found; but if a brief search is vain, the abscess is drained, leaving the diseased organ in situ. The question then arises: shall the patient be urged to submit to a subsequent appendicectomy? Surprisingly little material is avail-

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From the Surgical Department of the Peter Bent Brigham Hospital, Boston.

†For records and addresses of authors see "This Week's Issue," page 339.

‡Unusual situations of the caecum are not in question here. As a rule, when an abscess appears in an unusual position, it is the appendix which is displaced and not the caecum itself.

able upon which to base an answer to this question. In 1903, Barling reported, from the General Hospital in Birmingham, seventy-four cases of abscess, from only twenty-five of which the appendix was removed at the initial operation. He could find but one of the remaining forty-nine who suffered a recurrence of the disease after simple drainage. In the same year, Jaffé recorded one hundred cases of simple drainage performed at the Municipal Hospital at Posen and stated that subsequent removal of the appendix was required in only five. In 1924, Sproat obtained data indicating that twenty per cent. of all drained abscesses subsequently require reoperation and he quotes Haggard to the same effect. The figures of Schück from the City Hospital of Urban are more elaborate and complete. In a series of three hundred and eighty-two patients suffering from abscess, the appendix was removed at the initial operation in eighty-nine, or in a little less than a fourth of the whole. The remaining drained cases may be divided into two groups almost exactly equal in numbers. One hundred and forty-six patients returned promptly, as directed, for appendicectomy. In only two instances had the appendix been destroyed and in only sixteen had it been reduced to an innocuous band without a mucous lining. Thus in only twelve per cent. had the appendix become harmless. One hundred and forty-seven other patients were told to return for operation but did not do so. Half of these could never be traced, but of the other half it appeared that about twenty per cent. had suffered a return of their symptoms. A little more light is thrown upon the subject of recurrence by the history of earlier attacks in the original list of three hundred and eighty-two; for forty-four were being drained for the second time, ten for the third, four for the fourth, one for the fifth, and two for the sixth. Thus sixteen per cent. of all the patients were suffering from recurrent abscess when first seen.

From this brief survey it may be concluded that one attack, or even more than one, seldom leaves the appendix innocuous and that recurrence of the disease is to be expected in from ten to twenty per cent. of all instances of simple drainage. As to what proportion of abscesses yield the appendix at the initial operation, it is probable that some surgeons and clinics will be more radical than others. In Schück's series, only about one-fourth of all abscesses were treated by removal of the appendix. Yet at the Peter Bent Brigham Hospital, among two hundred and fifty-three instances of abscess* operated upon during the last fifteen years, the appendix was removed two hundred and nineteen times or in 86.6 per cent. of all cases. Only thirty-four patients could, in fact, be found for whom drainage without appendicectomy was found necessary.

As to the bearing which the situation of the abscess may have upon the accessibility of the appendix, nineteen of the thirty-four patients in the Brigham Hospital series subjected only to drainage presented eccentric abscesses and fifteen presented abscesses centering upon McBurney's point. As these latter, which may be considered normally placed, or central, must constitute the vast majority, it is evident that the appendix can far more readily be removed from a central than from an eccentric process. This is quite as might be expected, for whereas the whole appendix is likely, on theoretical grounds, to lie within the normally placed abscess, only the tip would be apt to be included in the peripheral one. As will subsequently appear, this is a most important consideration in treatment: the majority of abscesses from which the appendix can not be removed at the initial operation are eccentric, that is, situated in the pelvis or right flank, but there are few central abscesses from which a skilful operator, if he be willing to soil a good-sized incision, can not extract the diseased appendix.

In respect to the recurrence of symptoms after simple drainage, of the fifteen patients having central abscesses, three returned on account of recurrence of symptoms and one was operated upon later for intestinal obstruction; five remained free from recurrence, three could not be traced and three died, soon after drainage, of overwhelming sepsis and obstruction; and of the nineteen patients having eccentric abscesses, four returned for appendicectomy, five remained well without recurrence, one suffered a return of the abscess, and four could not be traced. The other five were subjected to appendicectomy soon after the initial drainage, that is, before leaving the hospital, a method which will be described presently in detail. Thus the two series are hardly parallel for very few of the nineteen were allowed the possibility of a recurrence.

The considerations which led to the plan for removing the appendix soon after the initial drainage, date back to the time when one of the writers was a house-officer at the Massachusetts General Hospital. A large pelvic abscess had been drained by an incision close to the inguinal ligament and had recurred. Several months after the second drainage, the patient presented himself for appendicectomy and an incision was made higher than, and mesial to, the earlier one. No difficulty was experienced in tracing the appendix down to a mass of adherent intestine in which only the tip of the organ was buried and from which it was easily freed. Later, another patient was seen who had been subjected on two previous occasions to drainage of what seemed to be a perinephric abscess, but when, for the third time, drainage was instituted, the faecal odor pointed to the ap-

*Possibly a critical review of the accounts of the physical examinations in this series would diminish the number of abscesses coming into accord with the definition at the beginning of this paper. There is a tendency to call a localized suppurative process an abscess even though it is not well isolated.

pendix as the probable source. Accordingly, some two weeks after drainage, a right rectus incision was made and the appendix followed from its base, which was in normal position, outward and upward to the very tip, which still opened into a granulating pocket. After removal of the appendix, the second wound was closed without drainage and healed without incident. Still later, in the first five instances of interval appendicectomy after drainage of the original abscess, it was noticed that in every case perforation had occurred very near the peripheral end of the organ. It appeared, therefore, that if an abscess were eccentric, it might well contain only the outer end of the appendix and upon this basis, five patients have subsequently been treated, with a marked degree of success, by the method of which the following is a good example:

A male, of thirty-three, entered the Peter Bent Brigham Hospital, complaining of pain about the umbilicus and the lower abdomen, of two weeks duration. For the first week he had suffered from nausea and vomiting. During the second week there had been urinary frequency and burning, and rectal tenesmus. Examination revealed a large tense abscess filling the lower pelvis. The temperature was 100.4° F., the pulse rate, 82, and the leucocytes, 21000. Drainage was established by a short, low incision, a little to the right of the mid-line, barely avoiding the bladder. Thirteen days later, the discharge had sensibly diminished and the faecal odor had disappeared. Accordingly, a second incision was made at McBurney's point—through the edge of the rectus muscle—the appendix was traced into the pelvis and readily detached from the shrunken abscess wall. It was perforated about 1 cm. from the distal end. As the first wound still offered drainage, the second wound was closed and healed per primam. It was thus possible to leave the patient sound abdominal incisions (the first being insignificant), to drain the abscess and to remove the appendix without undue delay. The patient went home completely healed in thirty-seven days from the date of his entrance.

It may be concluded that eccentric abscesses—such as form in the right flank or pelvis—are likely to include only the distal portion of the appendix; that perhaps one in five recurs after simple drainage; and that they can be treated by initial drainage through a short incision, followed, *when the discharge has greatly diminished but before the sinus has healed,* by removal of the appendix through a second incision made at McBurney's point. In most instances little difficulty will be experienced, firmly healed wounds will be left and the possibility of recurrence of the appendicitis will be eliminated. No such treatment is possible when the abscess is situated in the region of the caecum. Unless the appendix can be removed from such an abscess at the initial operation, the patient must return for interval operation or take his (one in five) chance of a recurrence.

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THE CONTROL OF HEALTH AFTER ECZEMA AND PSORIASIS

A Study on the Nutrition and Health of the Skin*

BY FRANCIS LOWELL BURNETT, M.D.†

I. The Principles

NUTRITION, HEALTH, AND DISEASE

"FOOD is the medicine of health and medicine the food of sickness."[1] The development and maintenance of the normal tissues are largely dependent on nutrient substances absorbed from the aliment. Assimilation is the final and most essential part of nutrition; but the complexity of the nutrient molecules passed into the lacteals, transferred to the circulation, probably acted on by enzymes from the glands of internal secretion, and finally forming a chemical union with the protoplasm of the cells, is beyond comprehension at present. In the nutritive process, however, the chemical reduction of the food and the course of the aliment through the digestive system has been described as being nicely correlated.[2] On this presumption, it is fair to assume that all three phases of nutrition, or digestion, absorption, and assimilation, bear a similar relationship. While digestion and assimilation are difficult to understand, the indices of absorption can be readily determined. In the passage of the aliment through the digestive system, it is finally moulded in the colon to form the feces. Various forms of the feces and varying periods that a marked meal takes to pass through the alimentary canal have been described, but one form and one rate are evidently normal, and these are indices of normal absorption and nutrition.[3] And conversely, if one form and one rate are normal, the others are abnormal, and may be applied to determine intestinal indigestion as a slight and early, yet exact disorder of nutrition.

Normal nutrition is the most important factor in the development of a healthy body. Health, however, as it is understood at present, is a vague and variable condition, which is generally thought of as freedom from a demonstrable disease. But when the indices of normal absorption are recognized and applied, health becomes a more exact state; because it is one that must be continuously built up by

*From the Dermatological Department of the Massachusetts General Hospital.
The assistance given by the staff in this investigation is gratefully acknowledged.
†For record and address of author see "This Week's Issue," page 339.

nutrient molecules derived from the aliment in passing through the digestive system within the limits of normal absorption. Under these circumstances, a reserve of health seems to be acquired which enhances the factors of safety in the body. But, as the indices of normal absorption have not yet been generally recognized or definitely established, there appear to be many factors in the food consumed and the mode of living of man that diminish the digested products the body recovers from the aliment and produce deficiency disorders. Without the recognition and correction of these early and slight disorders, the reserve is not generally maintained; and with malabsorption becoming progressively worse, the factors of safety in the tissues are little by little expended, the weakest tissue becomes exhausted, compensation is no longer possible, and a recognized metabolic disease becomes apparent. The deficiency thus created acts like an injurious agent, and is evidently an unrecognized cause of some of the metabolic diseases. A disturbance in the transfer of digested products to the tissues has been thought of for some time as a cause of the metabolic diseases, but up to this time a conception of the anabolic processes and a means to improve them have not been proposed. Consequently, the cure of disease and the restoration of health is not so much a matter of knowing more about disease as it is of understanding and regulating a state of health, about which relatively little is yet known.

The understanding and restoration of this state of health is brought about for the most part by educating patients how and what to eat, the requirements of the body for rest, and when exercise is beneficial. The purpose of such a health program is to elicit the complete action of a peculiar, yet apparently essential, part of the digestive system, the proximal colon. This secondary digestive pouch is in a very delicate state of balance, because it is formed by pulsating constricting rings; and yet when acting normally moulds the intestinal contents into discrete masses that compose the normal feces, and thus serves as a readily determined control of nutrition. The regulation of the aliment

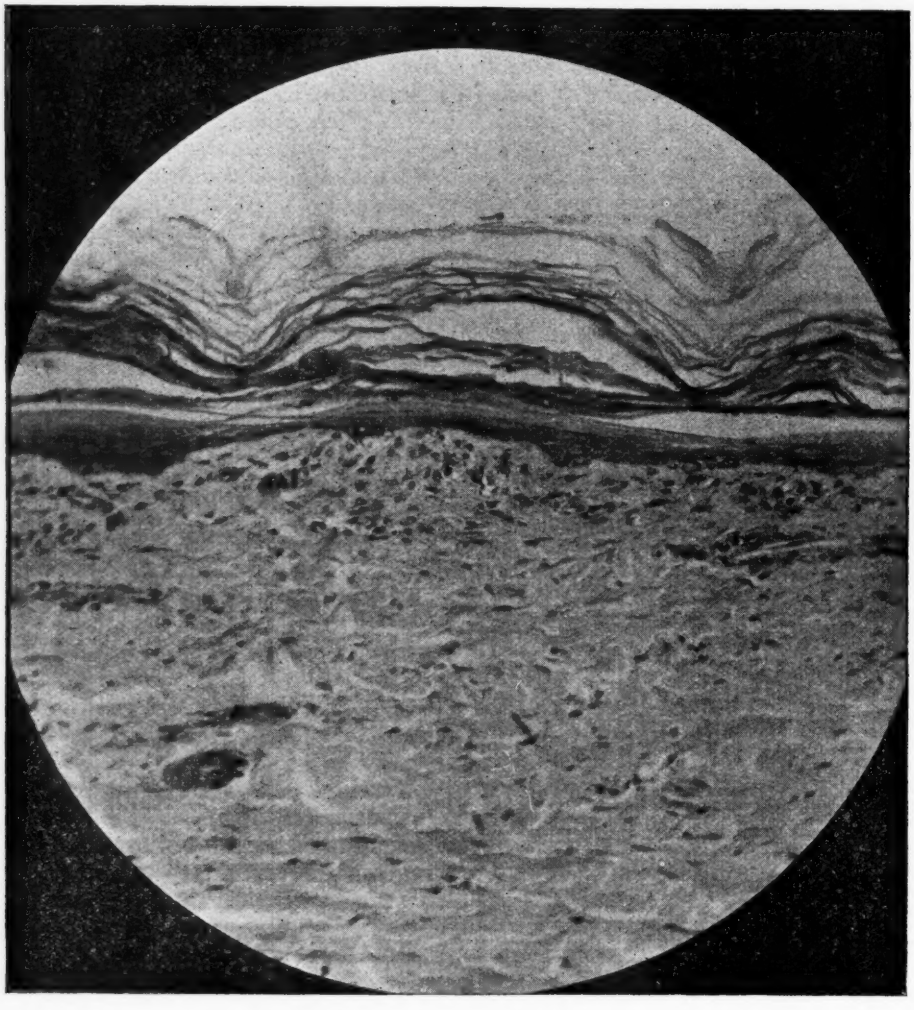

FIGURE 1. Photomicrograph of the skin in severe pellagra showing extreme atrophy of the integument. (This picture is used through the kindness of Dr. James Denton and *Tropical Medicine*.)

to elicit this complex and sensitive mechanism of nutrition resembles somewhat the dietary measures applied in diabetes mellitus; the exception being that in one an early and functional disorder of the digestive system is recognized and corrected, whereas in the other, dietary adjustments are made from the remote results of damaged tissue.

THE NUTRITION OF THE SKIN

The precise and automatic control exercised over nutritive material by the proximal colon affords a means of determining malabsorption and metabolic disorders. Various dermatoses are supposed to be of metabolic origin, and many etiological agents of intestinal origin have been investigated. From an understanding of the factors that influence the indices of normal absorption, whereby there is a failure of the normal nutrient molecules to reach the skin, a more logical inference is that this ever growing and highly specialized tissue becomes unhealthy because it is not being continually built up in normal nutrition. A relation between food factors and disorders of the skin have been noted by many investigators. Among them, Willan, more than a century ago, wrote[4] . . . "I believe that psoriasis often originates from occasional causes. . . . Food of difficult digestion, too great a quantity of acid fruits, . . . and some improper mixtures of foods, as milk and fish, are the circumstances to which patients refer the complaint." Some time later White found that infants with eczema generally passed stools in which the incomplete digestion of fat or carbohydrate was often apparent.[5] And more recently Burnett found that the elimination of faulty food factors relieved intestinal indigestion, as determined by the form of the feces.[6] Intestinal indigestion and malabsorption of this kind were commonly found in patients with eczema and psoriasis, and if relieved for sometime restored them to health. But having acquired a normal skin, many of them again got into careless ways of eating, once more afflicted themselves with intestinal indigestion, and new lesions of the skin appeared. From this deduction it became evident that the only cure of these diseases was the control of health.

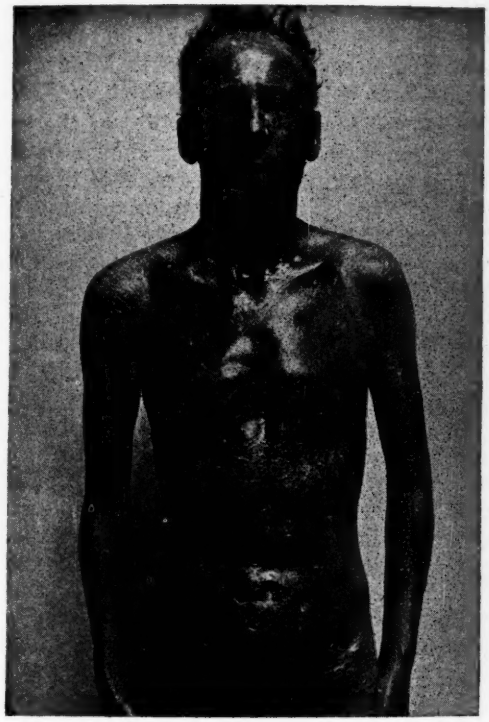

FIGURE 2. A patient with dermatitis exfoliativa, showing a very deficient condition of the body.

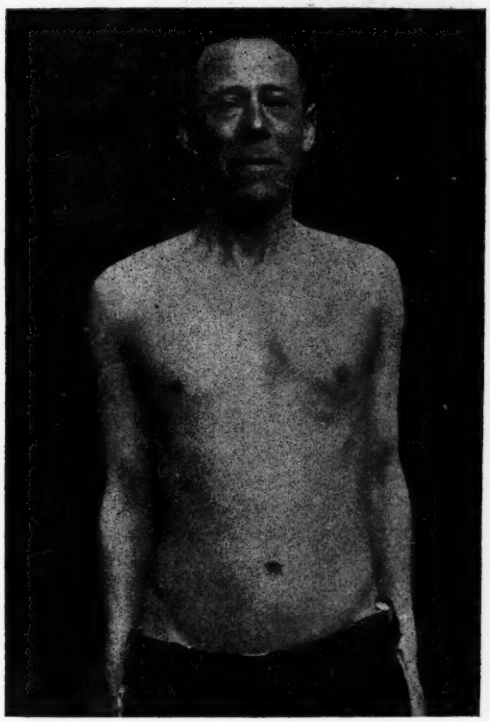

FIGURE 3. The same patient illustrated in Figure 2, after five months of normal absorption. The entire body has been restored to a normal condition through improved nutrition.

Lesions of the skin associated with malnutrition in experimental animals have been described by McCarrison.[7] Diarrhoea is one of the earliest as well as one of the most constant symptoms. After a while, among other deficiency changes in the tissues, "the skin becomes rough and scaly, showing branny desquamation, and in some cases, a scaly eczematous condition. The hair also falls out easily."

A further relationship between a skin disease and malnutrition is evident in pellagra. In describing one of the most prominent signs of this disease, Goldberger and Tanner write "the bowels tended to overactivity, there was looseness of the bowels".[8] And in a comprehensive and detailed study of pellagra by Denton, the skin of the wrists are pigmented, scaly, and

atrophic; but in later lesions the skin is so atrophied that the papillae have entirely disappeared and the basal layer lies directly on a dense fibrosed chorium, as shown in Figure 1.[9] Although this condition illustrates a deficiency of the skin from an extreme metabolic disturbance, it serves to bring forcibly to the attention the fact that this tissue apparently becomes weak and atrophied on account of malassimilation. The skin does not continually receive the normal nutrient substances to keep it built up and growing. This deficiency, associated perhaps with a peculiarity of the nutrient sub-

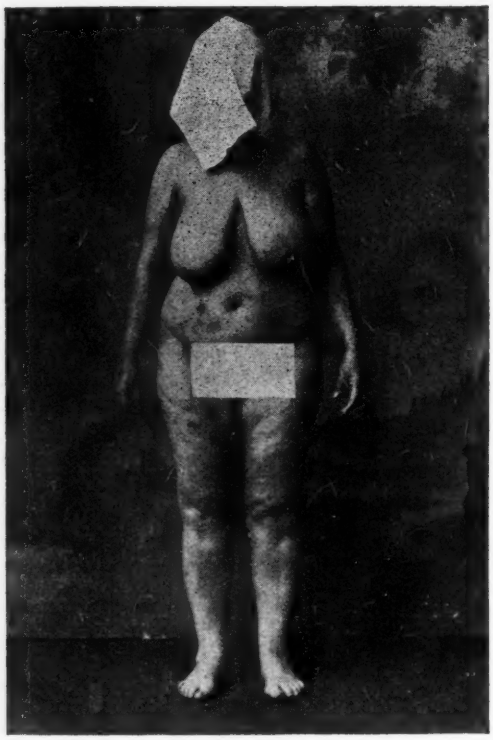

FIGURE 4. An overweight woman with eczema as a result of malabsorption. By dietary treatment the skin has become normal, and through normal absorption she now maintains a healthy skin.

stances or variations in the cellular structure of the tissue, causes the skin to break down in the recognized lesions of eczema and psoriasis. The severe forms of these dermatoses sometimes develop into dermatitis exfoliativa, in which the skin is atrophied somewhat like pellagra. The adult body built up through normal nutrition should not vary a great deal in weight. In contrast with this requirement observe the body of the patient with dermatitis exfoliativa following psoriasis, illustrated in Figure 2. To be sure, the redness and atrophy make the skin the most prominent disorder, but malnutrition is also shown in the smallness of the waist and the leanness of the arms. Indeed, the general deficiency in this body is so apparent that it resembles that of scrawny animals fed on incomplete food. In this condition the patient was eating a large amount of food very rapidly, three soft dejections were common daily, and a marked evening meal was first seen in the feces in fifteen hours and last seen in sixty-three hours. With an intestinal rate of this kind, an enormous amount of nutritive material was passing through the body, but little was being digested and absorbed. To improve his nutrition, he was advised to prepare his food better for digestion by mastication, to reduce the amount, and to make a few minor changes in the proportion. With these adjustments in his ways of eating, the feces became formed in several weeks, and later indicated complete digestion and absorption with an intestinal rate of seventy-four and one hundred and forty-one hours. After several months of this kind of nutrition, the deficiency of his body was made up by an increase of about seven kilograms and his skin became healthy, as shown in Figure 3.

Another contrast in the weight of the healthy body through malnutrition is shown in Figure 4. This woman has an increment of fifteen kilograms of fat. From an understanding of the nice adaptation of the digestive system to nutrition and the animal economy, the accumulation of this useless material was made at the expense of the normal tissues. In this patient the skin was assessed, with eczema as the result. She had been eating too often, too much starchy food, and had been taking cathartics for several years. In dietary treatment, cathartics were eliminated, she was advised to eat only three times a day, and starchy food was considerably reduced. With these changes in the aliment, natural dejections became regular in several weeks, and later became normal with an intestinal rate of sixty-three and one hundred and thirty-four hours. After several months, the skin became normal and the body reduced a few kilograms.

Other seemingly successful forms of treatment have been applied in these dermatoses. Without, however, appreciating the changes occurring in nutrition from variations of a patient's mode of living, the restoration of health is likely to be due to improved nutrition. This may be the result of dietary directions given with most treatments a difference in food consumed at home as compared with that in a hospital ward, or experiments carried on by patients who instinctively attempt to correct erroneous ways of eating. But irrespective of the treatment that once relieved these diseases, the real problem is to effect a cure by preventing subsequent attacks. Such an outcome from treatment generally applied now is not to be expected, as described in a textbook prognoses. "While eczema must, in the larger number of cases, be considered obstinate, yet instances are relatively few in which relief and cure cannot be effected if proper opportunity is given to reach that end; but this does not mean permanency or freedom from future attacks, unless the etiological factors can be removed or kept in abeyance, for if these come into play, recurrence

is possible or, in many cases, probable." Furthermore, "the course of psoriasis is, in all instances, essentially chronic, old patches persisting, some fading away, and new ones developing. Occasionally the disease will entirely disappear, remain in abeyance for months and years, and then become active again. In a few instances, the severe type, after persisting for some years, finally develops into dermatitis exfoliativa and in a few of these, arthritis deformans was associated."[10] On the other hand, when patients realize that the cure of these dermatoses may be brought about through normal nutrition in the control of health and that there are several ways to determine this condition, the prospect no longer may be a matter of conjecture.

II. The Practice

The Restoration of a Healthy Skin

In the practice of nutrition on exact principles, patients with eczema and psoriasis must understand that they have a weak skin, and it is because of some faulty food factor that intestinal indigestion and malabsorption have been produced and the skin has not received generally the digested products that are necessary to keep it built up and healthy. To understand nutrition from this point of view, patients must be educated to interpret variations in the action of their digestive systems from good factors and to know some of the simple measures to correct them. Patients vary considerably in their capacity to learn and also in their power to correct erroneous ways of living over a long period of time. In the beginning, all patients manifest a great interest in the simple and sensible principles of this treatment and often express an inherent conviction of the beneficial results to be derived from carrying them out.

Almost all patients have a sufficiently good digestive system to respond to adjustments in the alimentary mixture and act well enough to supply some of the nutrient molecules essential to relieve the disorders of the skin. In this study one patient acquired a healthy skin after fifty-two years of psoriasis, and another after thirty-one years of eczema. The formation of the proximal colon by dietary measures in patients who have had a fixation or partial resection of the gut is exceedingly difficult. The time taken to restore a healthy skin varies enormously and depends on how faithfully the requirements for normal absorption are fulfilled, the age of the patient, and the degree of deficiency in the digestive system. Early conditions of eczema and psoriasis often respond quickly and are relieved in a few months; but with old conditions which appear to be associated with an atrophy of the intestines and impotent digestive fluids, signs of improvement in the skin may take months, and complete recovery is a matter of years. In these patients the ingestion of dilute hydrochloric acid and enteric coated pancreatin tablets seem to aid digestion.

In obtaining a detailed history from the patient of his mode of living, a fault or faults to correct are invariably found. The commonest error is eating too fast or too much; but an excess of sweet, fat, highly spiced food, or fruit is sometimes revealed; then habitual eating between meals, the abuse of cathartics, oils, and enemata, carelessness in defecation, the loss of sleep, and insufficient muscular exercise are some of the other factors that influence the anabolic processes. One or more of these errors in the mode of living prevent normal absorption and the ever growing skin is not continuously built up. The education of a patient to recognize early and slight metabolic disorders and to apply simple measures for their correction is best carried out with diagrams of the digestive system, roentgenograms of the normal and abnormal colon, pictures of the normal and abnormal forms of the feces, figures on the intestinal rate, and a record of a person controlling his health. With the aid of these illustrations and an explanation of their significance, a patient may be made to understand something about his nutrition. Then he is told that he has a digestive system that was especially designed to maintain the integrity of his body; but because he has been ignorant or careless of such a delicately adjusted mechanism, his body and his skin have not been getting proper nourishment from his food. The disorder is due to his ways of eating or living. The patient is given a printed protocol of food consumed, time spent at meals, time and kind of dejections, and a test of the intestinal rate; and told to keep a similar record for a week. On the protocol is also given an explanation of how to determine the intestinal rate and a description of the different forms of the feces. The itching, smarting or burning of the skin should be treated by the local application of salves, washes, or powders. When relieved of these irritating symptoms, the anabolic processes may be aided by more profound and longer sleep.

RECORD I

A Record Showing Food, Feces, and Rapid Intestinal Rate of a Patient With Intestinal Indigestion, Malabsorption, and Psoriasis

	Thursday, March 17, 1927
9-9:15	2 buttered toast, coffee.
10:30	Soft dejection.
1-1:20	Eggs, bacon, 2 muffins, prunes, cake, milk.
7-7:35	Steak, potato, peas, bread and butter, blanc mange, tea.
7:45	Seeds taken to mark this meal.
	Friday, March 18
7:35	Soft dejection — seeds — *Initial Rate 12 hours.*
9-9:12	Grapefruit, griddle cakes, coffee.
9:30	Soft dejection—seeds.
1-1:25	Egg, bread and butter, apple pie, chocolate.
7-7:30	Lamb chop, bread and butter, prunes, ice cream, cake, tea.
8:30	Soft dejection—seeds.

Saturday, March 19

8:30	Soft dejection—seeds.
8:50-9	Toast, butter, coffee.
12:50-1:12	Lamb chop, parsnips, bread and butter, chocolate.
7:15-7:45	Egg salad, bread and butter, prunes, cake, tea.
11:15	Soft dejection — seeds — *Final Rate 51 hours.*

At the next visit, a report somewhat like that partially shown in Record I may be brought in. Such a record, with an intestinal rate of twelve and fifty-one hours, demonstrates conclusively to the patient that he has intestinal indigestion, malabsorption, and the skin does not get the nutrient molecules from the food that are essential to restore it to health. In this case the excitability of the colon was due in part to the previous use of cathartics, and also to the ingestion of too much fruit. Ordinary servings of grapefruit, apple pie, and prunes in one day will generally produce a stimulation of the colon similar to physic. On the other hand, the time spent at meals and the amount and proportion of the food are without criticism at present. Protein, fat, or carbohydrate indigestion, as determined by an examination of the feces, is often an aid in adjusting the diet.

As detailed instructions about the selection of food were not given during the first visit, the record also shows the kinds of food the patient likes and the sort of alimentary mixture he ingests to nourish his body. As there is considerable latitude in the choice of food, there is no reason to require a patient to eat oatmeal, kidneys, and parsnips, if he prefers graham toast, lamb chops, and cauliflower. At this visit, however, if he is a man taking only a small amount of muscular exercise, he is told to consume about 100 grams of protein, 100 grams of fat, and 200 grams of carbohydrate, in a light breakfast and luncheon, but a good dinner. Fifteen minutes should be spent at breakfast, twenty minutes at luncheon, and thirty minutes at dinner. He should also try to defecate regularly an hour or so after two of the meals; but those having a rapid intestinal rate are likely to go a day without a dejection for the benefit of the body. Elderly and sedentary patients get better on two-thirds of this amount divided into two meals. On this regimen, a moderate breakfast is allowed in the middle of the morning and a good dinner in the evening.

Ordinarily, if the faults are not numerous, the patient is advised to take fruit only once a day, at luncheon or dinner for a week, and without keeping a record. During the next week, however, a second test of the action of the digestive system should be described in a full record. In this record a slight increase in the absorption is often seen; for though the initial rate may remain at about twelve hours, the final rate has increased to eighty-seven hours. During this time a day has passed without a dejection, and the feces have become formed. Then, too, the patient begins to feel the less irritation from the skin, sleeps better, and many of the red areas on the upper part of the body have become a lighter color. The weight usually remains unchanged. If the patient continues to eat about the same way, a further adjustment in the diet is unnecessary, but he must be told that the irritability of the colon is decreasing and sometime more fruit should be added to keep the aliment passing through the digestive apparatus regularly and with normal absorption.

After the second record has been examined and health measures to improve it have been advised, the patient should follow the directions about eating for two weeks and keep a full record during the following week. At this time, if the bowel is not seriously atrophied and the digestive fluids are not very low in potency, indigestion has been generally relieved, the feces have become normal, and a marked evening meal begins to be dejected in sixty-three hours and continues to be apparent for one hundred thirty-four hours. Furthermore, the skin now shows a marked improvement, there is less scaling over the lesions, the red areas are diminished in size, and new spots have not appeared. Now, too, patients often speak of being entirely relieved of obscure abdominal symptoms, and are enthusiastic over feeling in an improved state of well-being. Not uncommonly at this time, the underweight patients have gained a kilogram.

THE CONTROL OF HEALTH

From now on the disordered patient must be made to realize that he is being changed into a healthy person. The equilibrium of the body in health is in a delicate state of balance, and many factors have to be controlled to keep it so. Everyone is human and slight digressions from the even tenor of healthy living occasionally are not serious, but continued disregard of early and slight signs of disordered nutrition has invariably led to another attack of eczema or psoriasis; for the only cure of these disorders appears to be the continual building up of the integument by the nutrient molecules of normal digestion and absorption in the control of health.

Again and again the person must be told that he must keep a check on the action of the digestive apparatus. He must observe his stools and make sure that they are entirely composed of discrete masses. When a portion of the feces passed is soft and formless, it is an indication of a metabolic disorder, intestinal indigestion, and malabsorption, and the skin is not getting the nutrient molecules from the food that are essential to keep it healthy. There is a cause for this disorder. It may be due to eating too fast, too much, badly proportioned foods, too much rich food or fruit. The cause must be ascertained and eliminated; for if malabsorption continues for some time, new spots will appear in the skin. As a second check in the control of health, a determination of the intestinal rate

should be made once a month and recorded. If the initial rate gets below thirty-six hours or above eighty-seven and the final below one hundred ten or above one hundred fifty-six, dietary adjustments are necessary to control health. A third check should be made on the weight of the body. The nutritive apparatus was designed to maintain a certain mass of flesh and blood, and a loss or gain of a few kilograms above or below the normal weight are again due to indiscretions in eating or in the mode of living. Careless ways insidiously and unwittingly slip into a person's mode of living. Early and slight disorders of the digestive system and nutrition must be checked before they become progressively worse and lead to a breaking down of the tissues. With these points of view in mind it is sometimes necessary for the counsellor of health to act also as mentor for those whose health he is attempting to control. And if a person does not return when told, every two or three months with a record, he should be written to, told of the consequences of not continuing to control his health, asked to keep a record for a week, and given an appointment. Such a report as illustrated in Record II, with an intestinal rate of sixty-three and one hundred thirty-four hours, shows a marked contrast to the absorption and nutrition in Record I, with a rate of twelve and fifty-one hours.

RECORD II

A Record Showing Food, Feces, and Intestinal Rate of a Person With Presumably Normal Absorption and Nutrition, Controlling Her Health After Eczema

	Saturday, April 9, 1927
8-8:15	1 egg, 1 toast, 1 coffee.
9:00	Normal dejection.
12-12:20	Beef stew, fruit salad, 1 cake, 1 tea.
5:30-6:00	Turnip, lamb, jello, rhubarb, tea.
6:00	Seeds taken to mark this meal.
	Sunday, April 10
8:30-8:45	Small toast, rhubarb, coffee.
9:00	Normal dejection.
1-1:20	Egg salad, 1 toast, 1 tea, orange, cookie.
6-6:30	1 potato, lamb, pears, cake, tea.
	Monday, April 11
8:05-8:20	1 egg, 1 toast, 1 coffee.
9:00	Normal dejection.
12-12:20	Toast, pears, orange salad, 2 cookies, tea.
5-5:30	Butter beans, steak, jello, 1 cookie, tea.
10:00	Normal dejection.
	Tuesday, April 12
7:55-8:10	1 egg, 1 toast, 1 tea.
9:00	Normal dejection — seeds. *Initial Rate 63 hours.*
12-12:20	1 orange, cabbage salad, 1 toast, 1 cake.
5-5:30	Beef, carrots, 1 cake, coffee, apple.
10:00	Normal dejection—seeds.
	Wednesday, April 13
8-8:15	2 raisin bread, 1 coffee.
12-12:20	Beef stew, fruit salad, 2 cookies, tea.
5:05-5:35	Spinach, toast, beef, jello, cake, coffee.
10:00	Normal dejection—seeds.
	Thursday, April 14
7:55-8:10	1 egg, 1 toast, 1 tea.
8:30	Normal dejection—seeds.
12-12:20	1 orange, sardines, 1 toast, coffee, jello.
5-5:30	Lamb, turnip, apple pie, tea.
9:00	Normal dejection—seeds.
	Friday, April 15
7:45-8:00	Oatmeal, milk.
8:30	Normal dejection — seeds. *Final Rate 134 hours.*
12-12:20	Egg salad, 1 toast, 1 orange, 2 cookies, tea.
5-5:30	Haddock, butter beans, fruit salad, 1 cookie.
10:00	Normal dejection.

A fourth check in the control of health should be made annually on the condition of the body by a comprehensive and thorough health examination. Of the few made on persons attempting continually to build up their bodies by normal nutrition, only normal organs, tissues, and secretions have been found; but the examination serves to assure the person that he enjoys a superlative state of well being.

III. The Results

Absorption and the Health of the Skin

At present the results obtained from instructing three hundred patients in these principles of nutrition reflect the difficulties of teaching those of moderate intelligence about the action of the digestive system from food factors, as only half of those given directions returned with records and sought further advice about dietary regulations. A portion of the most closely followed patients have been classified, in Tables 1 and 2, according to their ability to learn about their nutrition and their morale to carry out the principles for the control of health after eczema or psoriasis. Here, the name in part, the sex, the age, and the duration of the disease in years, at the beginning of the treatment, then, if known, the form of the feces, intestinal rate, and condition of the skin at various periods afterward, and lastly the results are recorded. Adding this portion to all others known about, the results obtained with this treatment at present separate the patients generally into three classes.

In the first class of about thirty per cent. are those who learn readily and continue to carry out an exact health program. After becoming healthy, most of these patients are so trustworthy that, in spite of not being seen for three months, they return as directed and bring in good records. Furthermore, by improving their physical fitness in this way, they seem to acquire a reserve of health, so that if they do inadvertently provoke intestinal indigestion, the reserve is drawn on and the skin continues normal. In Figure 5, is shown the trunk of a thirteen-year old girl who had eczema continuously since infancy. She was relieved of the disease in October, 1926, and since that time has reported every few months and brought in a health record showing normal indices of absorption. Her skin continues healthy. Since treatment began

TABLE I. THE CONTROL OF HEALTH AFTER ECZEMA.

A Table Showing the Form of Feces, Intestinal Rate, and Condition of the Skin of Subjects at Various Periods during Treatment.
(Feces and Intestinal Rate Determined According to a Previous Publication (11))

Name	Sex	Age	Duration of disease in Yrs.	First Month	Second-Fourth Month	Fifth-Eighth Month	First Year	Second-Fifth Years	General Condition of Skin Now
						CLASS I			
BAR	F	13	12	soft, ------, same	formed, 45-138, better	normal, 89-113, better	normal, 40-139, healthy	normal, 41-137, healthy	healthy
BEN	M	35	9	soft, 12-63, same	soft, 11-87, same	normal, 36-131, better	normal, 63-96, healthy		healthy
CRO	F	31	2	soft, 15-43, same	normal, 62-124, better	normal, 63-134, healthy	normal, 63-134, healthy	normal, 61-135, healthy	healthy
DOO	F	15	14	formed, 22-119, better	normal, 42-112, better	soft, 19-62, worse	normal, ------, healthy	normal, ------, healthy	healthy
GUT	M	73	15	soft, 24-87, same	formed, ------, better	normal, ------, better	normal, ------, healthy	normal, 63-110, healthy	healthy
HUB	M	4	4	soft, -------, same	normal, ------, better	normal, ------, better	normal, ------, healthy		healthy
JOH	F	20	14	soft, 25-63, better	formed, 36-86, better	normal, 72-121, better	normal, 38-110, healthy	normal, 38-111, healthy	healthy
PET	F	13	12	formed, ------, same	normal, 37-96, better	normal, ------, better	normal, ------, healthy		healthy
						CLASS II			
ALM	F	43	3	soft, 17-49, same	formed, 37-86, better	normal, 39-109, better	soft, 31-61, worse	formed, 36-41, better	improved
AYE	M	56	2	soft, 11-39, same	soft, 24-84, same	formed, ------, better	formed, ------, better	formed, ------, better	improved
BRO	F	67	6	soft, 14-85, same	formed, 37-111, better	formed, 37-87, same			improved
GOR	F	15	2	soft, 20-87, same	normal, 49-145, better	normal, 49-120, better	normal, 49-145, better	normal, 38-117, better	improved
McK	F	64	6	soft, 13-74, same	soft, 18-87, same	normal, 62-146, better	formed, 12-156, same	------, ------, ------	improved
OBR	F	17	15	soft, 12-72, same	formed, 36----, better	soft, ------, worse	soft, ------, worse	formed, 21-90, better	improved
O'N	M	18	17	soft, -----, same	soft, 20-87, same	formed, 49-111, better	normal, 62-147, better	normal, ------, better	improved
WAR	F	53	13	soft, 15---, same	normal, 41-134, better	normal, 50-135, better	soft, 13-87, worse	normal, 28-144, better	improved
						CLASS III			
BAK	F	13	11	soft, -----, same	soft, -----, same	soft, ------, same	soft, ------, same	soft, ------, same	eczema
CAL	M	39	7	soft, 15-85, same	formed, 36-135, better	formed, 38-73, better	soft, 18-62, worse	soft, ------, same	eczema
DEA	M	18	4	soft, 15---, same	formed, 37-96, same	soft, ------, same	soft, ------, same	soft, ------, same	eczema
HAZ	M	43	25	soft, 12-87, same	formed, 36-61, better	formed, 36-61, better	normal, ------, healthy	soft, ------, same	eczema
MUR	M	33	10	soft, 15-87, same	------, -----, ------	normal, ------, healthy	soft, ------, worse	soft, ------, same	eczema
PLO	M	15	14	soft, -----, same	soft, -----, same	formed, ------, better	soft, ------, worse	soft, ------, same	eczema
SHI	F	15	13	soft, -----, same	formed, 36-85, better	soft, 12-63, worse	formed, 60-96, better	formed, 37-90, same	eczema
SWE	F	16	15	soft, 16-63, same	soft, -------, same	formed, 38-98, better	soft, ------, eczema	soft, 13-87, same	eczema

TABLE II. THE CONTROL OF HEALTH AFTER PSORIASIS.

A Table Showing the Form of Feces, Intestinal Rate, and Condition of the Skin of Subjects at Various Periods during Treatment.
Duration (Feces and Intestinal Rate Determined According to a Previous Publication (11))

SHI	F	15	13	soft, -----, same	formed, 36-85, better	soft, 12-63, worse	formed, 60-96, better	formed, 37-90, same	eczema
SWE	F	18	18	soft, 16-63, same	soft, -------, same	formed, 38-98, better	soft, ------, eczema	soft, 13-87, same	eczema

TABLE II. THE CONTROL OF HEALTH AFTER PSORIASIS.

A Table Showing the Form of Feces, Intestinal Rate, and Condition of the Skin of Subjects at Various Periods during Treatment. (Feces and Intestinal Rate Determined According to a Previous Publication (11).)

Name	Sex	Age	Duration of Disease in Yrs.	First Month	Second-Fourth Month	Fifth-Eighth Month	First Year	Second-Fifth Year	General Condition of Skin Now.
					CLASS I				
BER	F	23	5	soft, 12-108, same	formed, 26-108, better	formed, 24-134, better	formed, 20-138, healthy	normal, ------, healthy	healthy
COU	M	26	3	formed, 22-96, better	normal, 64----, better	soft, 17-42, worse	normal, 44-113, better	normal, ------, healthy	healthy
GOO	F	65	29	soft, 13-38, same	normal, 41-110, better	soft, 14-52, worse	normal, 42-130, better	normal, 65-136, healthy	healthy
HEY	F	35	1	soft, -----, same	normal, 37-120, better	normal, 36---, better	normal, ------, well	normal, ------, healthy	healthy
LEV	M	45	15	soft, 15-63, same	normal, 74-141, better	normal, -----, normal	soft, ------, worse	normal, ------, healthy	healthy
MAH	F	68	52	formed, ----, better	soft, 15----, worse	normal, -----, better	normal, 42-89, healthy	normal, 39-111, healthy	healthy
MOR	F	26	16	soft, 24-72, same	soft, 15-87, same	formed, 36-110, better	normal, 63-137, healthy	------, ------, healthy	healthy
STE	F	25	10	soft, 17-88, same	normal, 39-135, better	normal, 60-155, better	normal, 62-156, healthy	normal, 63-155, healthy	healthy
					CLASS II				
MAL	F	14	10	soft, -----, same	normal, 48-122, better	normal, 50-145, better	normal, 49-168, better	normal, 49-121, better	improved
MAY	M	48	15	formed, 36-135, same	soft, 15-42, worse	formed, 13-85, same	formed, 24-110, better		improved
OLE	M	26	1	formed, ------, same	formed, 27-87, same	normal, 69-112, better	normal, 87-132, better		improved
OWE	M	15	3	soft, 15-63, same	normal, 50-120, better	normal, 64-110, well	soft, ------, worse	formed, ------, better	improved
REA	M	33	7	soft, 27-87, same	formed, 50-123, better	soft, 15-79, worse	normal, 63-149, better	formed, 52-100, better	improved
STO	F	33	16	formed, 14-111, same	formed, 24-121, better	normal, 11-131, better	normal, 27-120, better		improved
WAL	F	15	7	soft, 18----, same	formed, 27-86, better	normal, 40-110, better	normal, 45-118, better	formed, 16-100, better	improved
ZIL	M	42	14	soft, 25-50, same	formed, 35-74, better	normal, 36-107, better	normal, 47-110, better	normal, 48-120, better	improved
					CLASS III				
ABO	M	11	1	soft, 14-62, same	formed, -----, better	normal, 40-134, better	normal, ------, healthy	soft, --------, worse	psoriasis
BER	F	20	1	----, -----, same	soft, -----, worse	------, ------, ------			psoriasis
CAR	F	29	15	soft, 13-91, same	formed, 14-110, ------	formed, 13-133, better	normal, 40-160, better	soft, -------, worse	psoriasis
FOS	F	33	12	formed, 13-113, ----	normal, 42-168, better	normal, 97-122, better		soft, -------, worse	psoriasis
GAL	M	33	25	soft, 16-89, ----	soft, 16-23, worse	formed, 16-100, better	soft, --------, worse	soft, -------, worse	psoriasis
HAL	F	37	18	soft, 11-21, ----	formed, 14-111, better	normal, ------, better	soft, 15-73, worse	soft, -------, worse	psoriasis
PAL	M	50	15	soft, 26-85, ----	formed, 37-110, better	formed, 37-96, ------	soft, 15-63, worse	soft, -------, worse	psoriasis
SHA	M	21	4	soft, -----, worse	formed, 24-47, better	diarrhoea -----, worse	soft, -----, worse	soft, 16-63, worse	psoriasis

she has gained seven kilograms. Another person of this class is shown in Figure 6. Four years ago this young Italian had psoriasis for a year.

"Dyspepsia," headaches, and menstrual pain are some of the minor disorders of which persons speak of being relieved after getting into a state

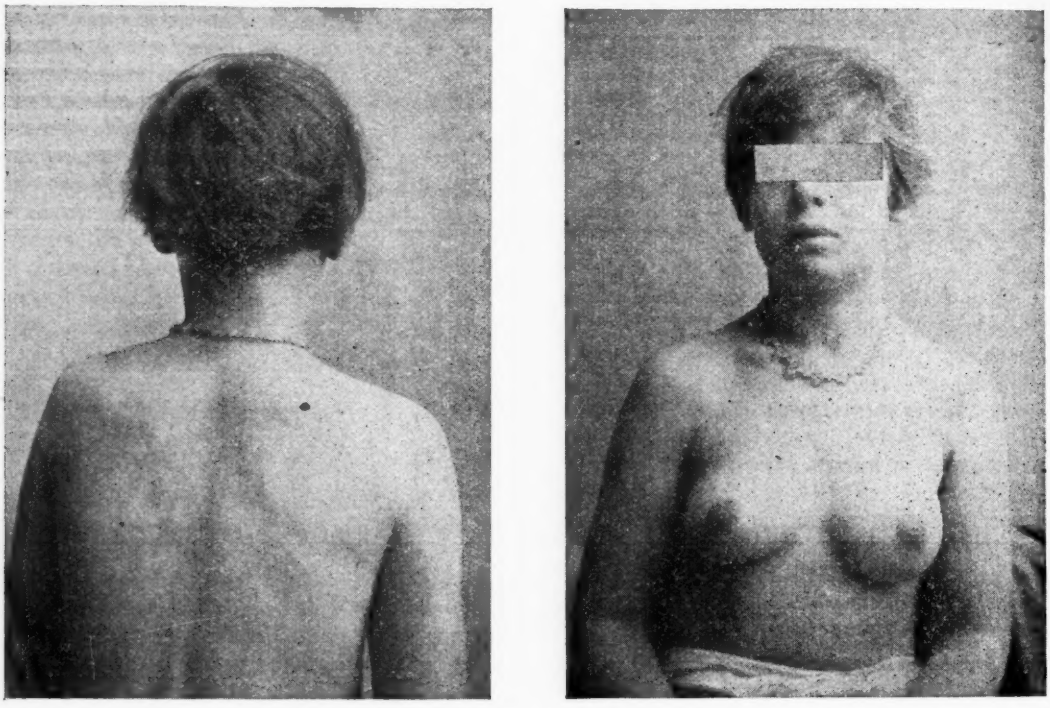

FIGURE 5. The normal skin of a girl controlling her health after eczema.

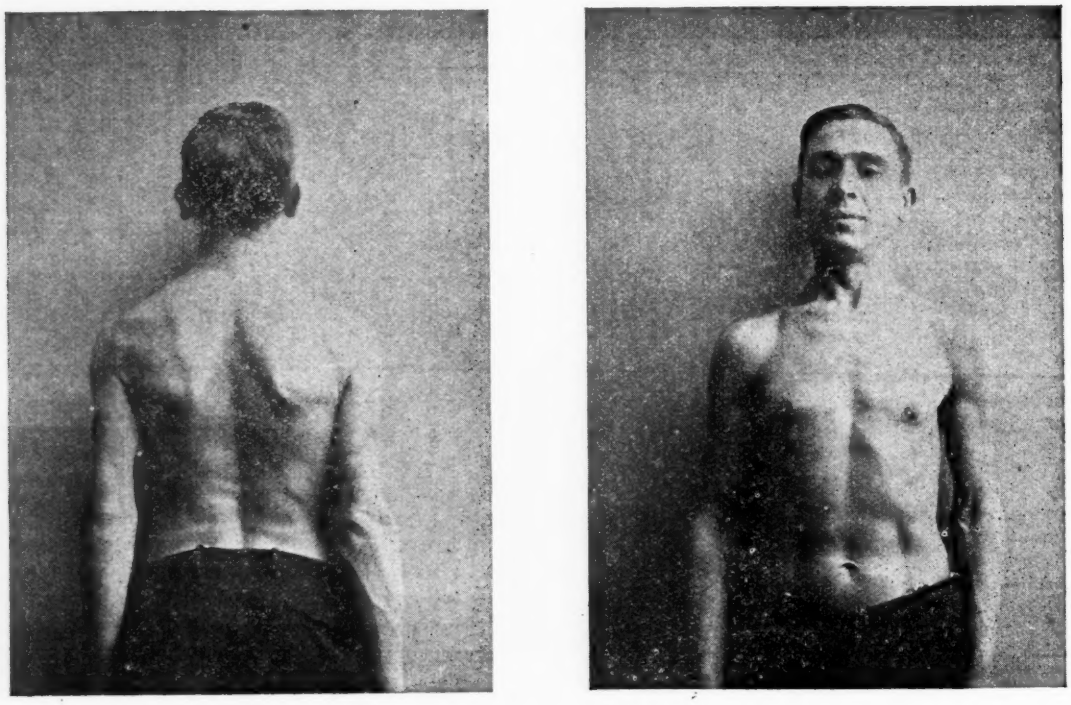

FIGURE 6. The normal skin of a man controlling his health after psoriasis.

With dietary treatment the skin became healthy in three months and with the exception of a few weeks, two years ago, after an attack of diarrhoea, has remained so since.

of improved well being. On the other hand, at the time of the catamenia intestinal indigestion is not uncommon.

In the second class of thirty per cent. the rela-

tion between the malnutrition and the condition of the skin is always readily demonstrated. These patients usually follow a health program for a while and notice a significant improvement or the skin becomes normal. At this time, careless and insidious changes occur in their mode of living, the functions of the digestive system become a little upset without symptoms or a knowledge of malabsorption, intestinal indigestion may continue for a few weeks, and then a few new lesions appear. Now these patients realize that something must be done, once more correct their ways of living, the indices of absorption again become normal and are checked, and after a while the condition of the skin improves. The condition of the patient's skin in this group varies to such an extent that it does not remain accurately classified for any length of time; but some of this class, if closely followed, might readily pass into class one.

Finally, the remaining forty per cent. of the patients are too ignorant to learn, have had so much done for them that they can do little for themselves, have ideas of their own about nutrition, or cannot control themselves. Consequently most of them continue to have intestinal indigestion, metabolic disorders, and eczema or psoriasis. But because some of these patients have not made a sufficiently good attempt to carry out a health program, acquire normal absorption, and notice an improvement in the health of the skin is no reason why another attempt should not be made later. A nutritive apparatus to accomplish a cure is generally within them if food is put into it in the right way; and some of these patients have made several attempts and a few have temporarily acquired a healthy skin.

IV. The Conclusions

Normal nutrition is the most important factor in the development of a healthy body. Health has been a vague and variable condition, and is thought of generally as one free from demonstrable disease. With an understanding of the significance of the normal feces and the normal intestinal rate as indices of normal nutrition, health becomes a more exact state; for it is one that must be continuously built up by nutrient substances derived from the aliment in passing through the digestive system within the limits of normal absorption. Under these circumstances a reserve of health seems to be acquired which evidently enhances the factors of safety in the body. On the other hand, when the feces and intestinal rate are abnormal, they are signs of intestinal indigestion; and then if malabsorption begins and becomes progressively worse, there seems to be a failure of the nutrient molecules to reach the tissues, the factors of safety become expended, the weakest tissue is assessed, and a readily determined metabolic disease becomes apparent. The deficiency thus created acts like an injurious agent, and is evidently an unrecognized cause of some of the metabolic diseases. From this point of view, the cure of disease and the restoration of health is not so much a matter of knowing more about disease as it is of understanding and regulating factors in a patient's mode of living, in order to acquire and maintain normal nutrition and a relatively unknown state of health. The application of principles to acquire this condition consists in educating patients how and what to eat and the requirements of the body for exercise and rest, according to the indices of absorption. To carry out this treatment patients are told about the action of their digestive system and asked to record the food consumed, the dejections, and a determination of the intestinal rate, during a week. An examination of the first record invariably reveals erroneous ways of living and malabsorption. Adjustments are then made and a similar test and record of the digestive system is written out during subsequent weeks, until the indices of absorption become normal. The balance of the digestive system in this condition is very delicate and checks must be made continually in order to ascertain and maintain normal absorption.

Many disorders are supposed to arise from a failure in the transfer of food to the tissues and have been called metabolic diseases. Various dermatoses have been placed in this class and many etiological agents of intestinal origin have been thought responsible; but from an understanding of the factors that influence the indices of normal absorption, whereby there is a failure of the normal nutrient molecules continually to reach the skin, a more logical inference is that this ever growing tissue becomes unhealthy because it is not being continuously built up in normal nutrition. Having a conception of the anabolic processes and the means to improve them, an application of the principles has been made in the treatment of eczema and psoriasis. In the first place, in considering normal nutrition as an exact and very delicately adjusted

process, erroneous ways of eating were invariably found to be corrected in patients with these diseases. Some of these faults were eating too fast and too much, badly proportioned meals, and the habitual use of laxatives. Subsequently, malabsorption was determined by finding a rapid intestinal rate, indicating that a great deal of nutritive material was going through instead of into the body to keep the tissues and especially the skin built up and healthy. In the second place, the results obtained in treatment show that there is a very definite correlation between metabolic disorders and the health of the skin; for the patients who generally carried out the principles and then maintained them afterward have been cured of these dermatoses and continue well through the control of health. Another group of patients, however, have improved their absorption and got the skin healthier; then, lapsing into careless and insidious ways of living, malabsorption became worse and new lesions appeared or the old ones became larger. Finally a third group that has done little or nothing to improve their nutrition continue to have intestinal indigestion, malabsorption, and eczema or psoriasis.

From these facts, it is evident that eczema and psoriasis are metabolic disorders and may be relieved by recognizing and correcting factors in a patient's mode of living that influence early and slight metabolic disorders as shown by the indices of absorption. But the prevention of subsequent attacks is only brought about by keeping a continual check on the action of the digestive system in normal absorption by the control of health.

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CAUSES OF ILLNESS AT DIFFERENT AGES

The interesting statement has recently been made by Surgeon General H. S. Cumming, of the United States Public Health Service, that the age period in which human beings are most free from sickness of any kind is between 20 and 25 years. In infancy and early childhood they are most subject to illness, but in late childhood and adolescence the "curve of ill-health" drops rapidly to a minimum; thereafter it gradually rises until another maximum is reached in old age.

This is one of the many interesting facts that have come out of a unique study made by the U. S. Public Health Service, the results of which are now being published.

The study is unique in the sense that an entire white population group composed of nearly 8,000 persons of all ages and both sexes, living under ordinary conditions in Hagerstown, Md., which is considered to be a representative small city of the middle eastern section of the United States, was kept under continuous observation for the occurrence of sickness for nearly two and one-half years. So far as known, it is the first study of its kind made anywhere in the world. While morbidity records are available for special groups of persons, such as children attending school and persons employed in factories, this survey included babies and small children, women in their homes, invalids and the aged; in fact, all persons composing a typical population.

The causes of sickness at different ages were carefully recorded, the practicing physicians of the town coöperating to the fullest extent in making these records medically correct. One of the most striking results was that respiratory illnesses accounted for over half of the illnesses at every age.

Aside from the predominance of respiratory causes, particularly the so-called "common cold", it was found that each principal period of life is characterized by certain causes of illness. In childhood, illnesses other than resiratory, are due chiefly to the communicable diseases, such as measles, whooping cough, chicken pox, diphtheria, and scarlet fever, to diseases and conditions of the skin, ears, eyes, and teeth, and to nervous and digestive disorders. In older ages illness, other than respiratory, is caused by the so-called "organic group" of diseases and conditions—those of the circulatory system, nervous system, and the kidneys. Illnesses resulting from all of these causes are at their lowest incidence in adolescence and young adult ages. The only major causes which result in a higher rate of sickness in young adult ages than in any other age are puerperal conditions, and these, of course, relate to females only. Certain specific causes of illness do have their higher incidence of sickness in the young adult ages, such as venereal diseases, typhoid fever, and pulmonary tuberculosis, but compared with other causes, they do not result in a very high sickness rate.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 14261

SUDDEN MIDABDOMINAL PAIN FOLLOWED BY HEMIPLEGIA

MEDICAL DEPARTMENT

An American construction engineer fifty years old entered the surgical wards March 9 complaining of pain and discoloration of the left foot.

He had been quite well except for very slight dyspnea on walking until sixteen days before admission. Then he was awakened by severe cramp-like pain in the left foot. This continued for an hour. Afterwards the foot became numb and remained so, although sensation had been gradually returning. The whole foot soon became black. The skin broke down in several places. Recently the line of discoloration had receded and the discharging areas had healed up. Later he felt intense burning, prickling and itching down the calf to the sole. This often awakened him.

The family history is negative. The past history is also negative except for influenza eleven years before admission and another attack with complications of pneumonia, acute nephritis and slight dyspnea eighteen months before admission. He was in bed for nine months at that time. The summer before admission he was up and about the house and gradually got back on his feet. Numerous examinations were made by medical men and finally he went back to work just after Thanksgiving. He was then short of breath, tired very easily and perspired very freely. These symptoms gradually grew worse.

Clinical examination showed a well nourished man propped up in bed, dyspneic and covered with perspiration, in no actual pain but with a drawn, anxious expression. Skin moist and clammy, with a grayish pallor. Slight drooping of the left eyelid which the patient said he had had for years. Lungs normal except for a few crackling râles at both bases. Apex impulse of the heart felt in the sixth space well beyond the nipple line. Rate rapid, 120 to 150. Absolute irregularity. Protodiastolic gallop rhythm. Sounds of variable quality. Pulse deficit 20 to 40. A soft short systolic murmur at the apex. Blood pressure 150/80 to 200/100. Artery walls slightly thickened. An electrocardiogram showed auricular fibrillation, rate 130, inverted $T_{1, 2,}$ and $_3$. No axis deviation. Abdomen negative. An elongated area of redness and coolness beginning where the anterior tibial artery comes through between the tibia and the fibula and extending downward on the anterior aspect of the left leg, gradually broadening out to include the whole foot about midway between the ankle and the toes. A beginning line of demarcation about midway of the dorsum of the foot with blackness, coldness and two areas of superficial slough distal to the line. No dorsalis pedis on that side, but a good posterior tibial. Considerable pitting edema of the lower left leg; none on the right. Sensation lost over the area of gangrene on the foot. Pupils and reflexes normal.

Amount of urine normal when recorded, specific gravity 1.018 to 1.012, a large to a slight trace of albumin at all of three examinations. Blood not recorded. Wassermann negative.

The patient was put on full digitalis therapy. March 13 a cardiological consultant found a loud third sound, practically a protodiastolic gallop rhythm, and thought that with digitalis the heart rate should be well controlled but that at best the patient's reserve would be undoubtedly low. "A semi-invalid life may be possible for him for months to a few years, and I suppose that for such an existence the midthigh operation may be suitable, although his heart will not keep him beridden."

The evening of March 13 the patient cried out and complained of excruciating pain in the midabdomen. The abdomen was not tender. The heart was as before. He writhed with pain but was rational and able to talk. Suddenly he stopped complaining of pain and began mumbling incoherently, with few real words. His face was drawn over to the left. The right biceps jerk was more prominent than the left. The pupils were small, dilated, equal, and reacted poorly to light. By the following morning the condition had almost entirely cleared up. Early the morning of March 15 he was unconscious, with right hemiplegia, head and eyes deviated to the left. The temperature rose to 103°, the pulse to 140, the respirations to 52. Early in the morning March 16 he died.

DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE PHYSICAL EXAMINATION

The inverted T wave in all leads is a very important piece of evidence pointing to myocardial damage.

We can assume that there is no sugar in the urine and that the sediment is negative.

DIFFERENTIAL DIAGNOSIS

It seems as if we ought to be able to hit most of this case right. He certainly has hypertension

and a big heart. He has evidence of peripheral embolism in two or three places, in the leg and brain certainly; about the abdomen I am not certain. With that T wave going down instead of up in all three leads we look for a gross myocardial lesion, often infarct, old or new. Having just had a case of infarct, I suppose it is dangerous to make that diagnosis again. Yet I think we must do it. Infarction may be the cause of that pain and might be the cause of the deviated T wave in all leads. Of course he might have intracardiac thrombus without infarct and pieces of that going here and there might give all the evidence of embolism which we naturally assume here. I assume this is embolic gangrene. He is probably young for arteriosclerotic gangrene, although there may be some arteriosclerosis there too. I do not think we can exclude disease of the kidneys or of any of the other organs except the organs of circulation. As to that abdominal attack, if that were embolism of the mesenteric artery or any other abdominal vessel one does not see how it could all have cleared up the next day. It seems as if there would be evidence of obstruction and evidence of fluid. On the other hand if we take it as a sign of cardiac infarct it is very low down. Cardiac infarct pain often comes in the epigastrium. The midabdomen is very low, I must say. I do not remember having seen a case of pain as low as that proved to be due to cardiac infarct. Maybe there is some embolism of the mesenteric vessels, although there was no evidence of it found the next day. There are three days between that and his death. I do not remember any case of that kind which within three days did not develop something definite in the way of evidence of obstruction of the intestine or the blood flow.

What else could it be if it was not either of these? I do not know. Acute pancreatitis of course can give such a pain. I do not see any good reason to suppose that however. It is a mere guess. I think I should say, although I recognize that the chances are very much against it, that this is a case of cardiac infarction with cardiac hypertrophy and dilatation due to hypertension, intracardiac thrombi and thence emboli in the leg and the brain.

A STUDENT: Do you ever get abdominal pain referred from a central nervous system lesion? I was thinking of infarct in the brain.

DR. CABOT: If so I never heard of it. If you say central nervous system generally you might mean the gastric crisis of tabes; but I have never heard of anything like this in tabes.

A STUDENT: Were these attacks too sudden to be caused by thrombo-obliterans?

DR. CABOT: That is a chronic disease.

A STUDENT: Could it be Raynaud's disease?

DR. CABOT: Raynaud's disease comes on gradually through many years, and ordinarily is bilateral, affects portions on each side of the body.

A STUDENT: Do you think he had any mitral disease to account for the auricular fibrillation?

DR. CABOT: Auricular fibrillation comes in all kinds of heart disease, although it is more common in mitral disease. I see no good evidence of mitral disease, and we can explain the fibrillation merely by the hypertensive heart.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Arteriosclerotic heart disease with hypertension.

DR. RICHARD C. CABOT'S DIAGNOSIS

Hypertensive heart disease.
Hypertrophy and dilatation of the heart.
Probably cardiac infarct with intracardiac thrombus.
Peripheral embolism in the leg, the brain, possibly in the abdomen.
Embolic gangrene of the foot.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Coronary sclerosis.
Infarct of the heart.
Mural thrombi of the left ventricle.

2. *Secondary or terminal lesions.*

Emphysema.
Chronic passive congestion, general.

DR. TRACY B. MALLORY: The post-mortem findings are quickly disposed of. We were limited to examination of the thoracic cavity, but I think that shows us most of the pathology. The heart was enlarged. It weighed 580 grams. Both ventricles were dilated and showed considerable hypertrophy, particularly the left. Near the apex there was a sharply outlined area of the myocardium where the musculature was decreased in consistency, slightly friable, and yellowish in color. The individual fibers could not be made out. It was the typical appearance of a very fresh infarct. A calcified mass was found in the descending branch of the left coronary artery in the usual situation, nearly, but not quite, occluding the coronary vessel. A thrombus was present in the left ventricle over the area of infarction.

The lungs showed a slight degree of emphysema and passive congestion.

DR. CABOT: And presumably the rest of the lesions were due to the heart clot?

DR. MALLORY: A source for emboli was at least present.

CASE 14262

A NEGLECTED RESPIRATORY INFECTION

Medical Department

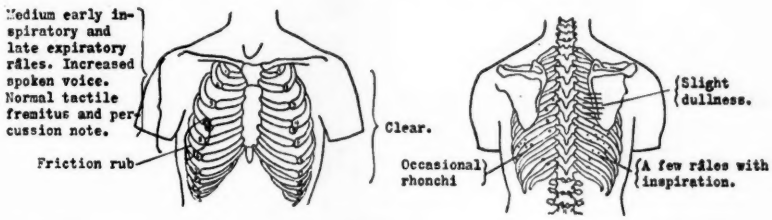
An American grocer fifty-two years old came alone to the Emergency Ward March 16.

For two weeks he had had a cold with unproductive cough. The day before admission he had a chill with malaise and an increase in cough. He went home and went to bed. Later he raised blood streaked sputum. The morning of admission he was too ill to go to his store.

No past history is recorded.

Clinical examination showed a well nourished man lying quietly on his right side, not appearing sick. Acneform papules over the upper back. Brownish macular blotches of pigmentation over the region of the left hip. Skin dry over the legs, dry and scaling over the elbows and knees. Eyes somewhat prominent, the left perhaps more than the right. Throat red and injected. Conjunctivae injected. Tongue dry and coated. A gland measuring 2 centimeters in the right axilla, a smaller one in the left. Lung examination was unsatisfactory because of respiratory difficulty. The heart was apparently normal. There was slight tenderness in the right upper quadrant and slight icterus. X-ray showed an area of dullness occupying the upper lobe of the right lung. The lower border of the area was sharply defined. The ribs were plainly visible through it.

The patient was given antipneumococcus serum. He showed moderate reaction after the first dose, but slept fairly well and the next morning had no pain, though there was still some cough, the leukocyte count was 11,400, and he was cyanotic and more markedly jaundiced. The condition of the mouth was fair. The heart was rapid and on one occasion frequent extrasystoles were heard. There was marked distention. On the whole except for the heart he seemed a trifle better than he was the previous night. Four doses of antipneumococcus serum were given in all with no ill effects. The night of March 19 he was not so well. The following morning the jaundice was more marked. There was a tracheal rattle throughout the chest. There was marked distention. That morning the patient died.


Medium early inspiratory and late expiratory râles. Increased spoken voice. Normal tactile fremitus and percussion note.
Friction rub
Clear.
Occasional rhonchi
Slight dullness.
A few râles with inspiration.

signs as shown in the diagram. Apex impulse of the heart not seen or felt. No enlargement to percussion. Second sound faint at the apex. Aortic second and pulmonic second sounds both faint. Artery walls slightly thickened. Blood pressure 125/70 to 100/78. Abdomen slightly distended, otherwise normal. Internal inguinal rings lax. Small external hemorrhoids. Extremities and reflexes normal. Left pupil larger than right, both pupils irregular, reacted normally to light.

Amount of urine normal, specific gravity 1.024 to 1.028, a very slight trace of albumin at all of three examinations, 4 to 20 leukocytes per field in two of three specimens of sediment. Blood: 10,700 to 20,200 leukocytes, 95 per cent. polymorphonuclears, hemoglobin 80 per cent., reds 5,100,000, smear normal. Wassermann not recorded. Non-protein nitrogen 34 milligrams. Urine precipitation test negative for pneumococcus Types I, II and III.

Temperature 104° to 101.2°, rectal. Pulse 137 to 89. Respirations 25 to 45.

The evening of March 17 the patient had sharp right upper quadrant pain on breathing with slight pain between times, disturbing his sleep. The following day he was slightly cyanotic. The mouth was not clean yet. The chest showed coarse râles over the front. The ex-

Discussion

BY A. V. BOCK, M.D.

NOTES ON THE HISTORY

Age is a very important thing to keep in mind whenever a patient comes to your office or the hospital ward, because there are conditions apt to be limited to various ages. The fact that this man is fifty-two years of age helps to rule out certain things and makes others a little more probable.

If he consulted his physician early and his physician allowed him to keep about his business, that was a mistake in judgment. Any of us who has a cold with cough and possibly some fever ought to be at home in bed. If you notice the cases of lobar pneumonia who have a preceding history of acute infection with cold and cough and feeling quite miserable for a week or ten days, they have a more difficult time and a more serious outlook on the average than the case starting abruptly with a chill. One reason for that may be that resistance to infection may not be so readily built up during an ambulatory period. In addition to infecting other people during such a period, barriers seem to be broken down, inviting more serious infection.

NOTES ON THE PHYSICAL EXAMINATION

These skin blotches are not very significant. It is unusual to see a real one at the age of fifty. It is a condition of the skin at puberty, and is seldom seen after the age of twenty-five. What it means here I do not know. Nor do I know what is the significance of the brownish pigmentation located on the left hip. If there were but one area one might think of it as a birthmark. The dryness and scaling over the elbows and knees is seen not infrequently in patients not accustomed to frequent bathing.

"Left eye perhaps more prominent than the right." A statement like that makes us wonder if there was any difference between the eyes.

"Tongue dry and coated." Nothing is said about the color of the mucous membrane, which of course is rather important.

On the second day of what appears to be a case of lobar pneumonia, we find signs in the right upper lobe of excessive moisture. This is unusual and should put the physician on his guard. Our patient is not getting off to a good start.

The lung signs have great significance from the point of view of prognosis. There was a friction rub over the right lower front. That is not very common. We expect to find a friction rub present over the part of the lung directly involved.

Apparently no enlargement of the heart was found. It is possible to be deceived about faintness of the second sounds. In a large man with a big chest wall the heart sounds may not come through as clearly as they do in other types of persons, and we may be misled into thinking the heart is not normal.

If we find distention of the abdomen as early as this in a disease which looks like pneumonia we know that the prognosis is very serious indeed. Early distention in lobar pneumonia is one of the signs we least like to see develop. I would much rather, from the point of view of possible recovery, find cyanosis or several other signs than early distention of the abdomen.

The urine is practically negative.

That is a very fair reaction on the part of the white cells at 20,200; not so good at 10,700. There again the level of the white count is of considerable prognostic import. A patient with lobar pneumonia with a white count of 3,000 or 4,000 and one with the kind of reaction one gets at 20,000 to 30,000 are two quite different things. A white count of 10,000 is not unusual in atypical pneumonia, particularly bronchopneumonia, and does not mean very much.

The house staff thought they were dealing with a Type IV pneumococcus.

It is unusual for the pulse rate to drop to 89 at this stage.

Pain in the abdomen is not unusual in lobar pneumonia. The abdomen can simulate a surgical abdomen. A great many appendices have been removed during lobar pneumonia on account of spasm and pain in the abdomen. We do not know why abdominal pain is so common an accompaniment of lobar pneumonia. It is interesting here because the lesion seems to be well above the diaphragm.

The immediate preceding history, the signs in the chest and abdominal distention all make for a bad prognosis.

Icterus is a condition that we see in 10 to 15 per cent. of the cases of lobar pneumonia. It is generally quite mild, no more than one sees in hemolysis of the blood such as we see in cases of pernicious anemia. It may be a moderately severe jaundice simulating that found in infectious jaundice, associated with acute cholecystitis presumably caused by the pneumococcus. So far as I know the mild grade has no influence on the course of lobar pneumonia. Possibly it is associated here with the slight tenderness, an inflammation of the bile ducts themselves.

Extrasystoles ordinarily have very little significance, but when they arrive in the course of an infection of this kind in a man of this age they probably do mean some toxic interference in the conduction system of the heart.

Distention started very early and became worse hour by hour. Almost nothing can be done in the way of its relief by therapy.

DIFFERENTIAL DIAGNOSIS

There is very little to be said about the differential diagnosis in a case like this. The treatment is largely a question of nursing care from the beginning. There is one important thing that would also help in the prognosis for this man. There was no past history recorded. What do we think about and what should we most like to know about in the history of a man of fifty-one?

STUDENTS: Alcohol.

DR. BOCK: A history of persistent use of

alcohol somehow or other has a bad effect, particularly from the point of view of prognosis, in pneumonia. Most of the patients who have lobar pneumonia, no matter of what type, do not survive if the previous background has been strongly alcoholic.

The only things that are unusual about this history, the only outstanding differences from the ordinary case, are the rather unusual signs in the lungs, the excess of moisture, and the early onset of distention of the abdomen, which always is a sign of ill omen. We see distention occurring on the seventh or eighth day of lobar pneumonia. It then may be due to relatively minor disturbances and does not ordinarily interfere with the recovery of the patient. Pyelitis for instance not infrequently may develop in the comparatively late stages of lobar pneumonia, and with this distention of a quite marked degree may be associated.

One other point about the serum. We have given very little Type I serum to patients who come to this hospital. In New York at the Harlem Hospital and Bellevue the practice is to give Type I and II serum regardless of the type involved.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Lobar pneumonia.

DR. A. V. BOCK'S DIAGNOSIS

Lobar pneumonia, right upper lobe.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Lobar pneumonia.

2. *Secondary or terminal lesions.*

Icterus.
Arteriosclerosis.

DR. TRACY B. MALLORY: The pathology here hardly needs any discussion. Of course it was a lobar pneumonia in the right upper lobe with a terminal extension to the left upper lobe, quite recent however. The organisms were Type I pneumococci. They must have been present in the sputum, even though the precipitin test was negative in the urine. Such precipitin tests are helpful if positive, but mean little if negative, since the specific substance may not appear in the urine.

The jaundice was of a fairly marked degree, and it was of some interest to see if any lesion could be demonstrated in the liver. The answer to this is that the liver was perfectly normal microscopically, and nothing showed in the bile ducts.

DR. BOCK: Was there nothing in the duodenum? Have you any theory as to why jaundice appeared?

DR. MALLORY: It may have been hemolytic.

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THE SOMERVILLE OUTBREAK

IN the days when the working-man's pay was a wage it was usually his custom to have his mid-day lunch put up at home. Since his pay has become a salary and since his wife, with the new prosperity, has shed many of her domestic cares, he buys a ready made lunch supplied by chain restaurants. With the home-made lunch a contaminated or spoiled ingredient might cause the illness of the working-man, or of the few fellow workers with whom he might share his meal. In this case the poisoning or infection would be limited to a few. Now that we have whole-sale production and distribution of lunches, a tainted article of food may affect so many consumers that an epidemic takes place. This is apparently what recently happened in Somerville and Charlestown. There on the sixteenth of July some one hundred and forty-three employes of three large industrial plants, shortly after their noon lunch were seized with acute attacks of gastritis. About a third of those affected were so ill as to require hospital care. The onset was abrupt, the upset severe. The interval between the eating of the food and the appearance of first symptoms was short, varying from one hour and a half to possibly six or seven hours. Vomiting, violent and persistent, accompanied by collapse was the first and most prominent symptom. Sometimes diarrhoea marked the beginning of the attack but it was not present in all cases. The pulse was not raised in beat; whether fever was present is not known. In some patients there was cyanosis of fingers and toes. Under eliminative treatment the illness was controlled, leaving the patients exhausted but with no more serious ailments. All these facts point to a food infection by bacteria possibly of the Salmonella group.

Upon investigation it appears that nearly all of the affected ate of box lunches prepared and delivered to these manufacturing plants by a firm operating a chain of restaurants. Each lunch consisted of a jelly sandwich, a minced ham sandwich, a corned beef sandwich, a fig newton, a pear and a piece of chocolate Washington cream pie. With some of the lunches, a bottle of milk or a bottle of coffee were supplied as extras. Every one known to have eaten the cream pie was made sick. A few cases occurred among persons who ate no pie or who partook of none of the food in these lunch boxes. There is reason to suppose, however, that these attacks were somewhat different in nature and may have been due to other causes. It also appears that some one hundred and seventy employes and patrons of the various restaurants in this chain were similarly stricken and they, too, ate chocolate cream pie of the same batch supplied to the Somerville workmen. There is every reason to assume, pending the report of the bacteriologic examination, that it was this particular article of food which caused the trouble, and the assumption is strengthened by the very practical but heroic test made by Dr. Fred Bailey of the Boston City Health Department. Doctor Bailey first ate one sandwich, then the others and feeling no ill effects, finished his test meal with the cream pie in question. Within five hours he was seized with an attack of vomiting and for five hours experienced all the distressing symptoms that characterized the Somerville illness.

It is of scientific interest, of course, to know the nature of the bacteria that were responsible for these cases and it is of both practical and scientific importance to learn how they gained access to the pie. But, whatever the cause may be, these cases are to be charged to our present methods of quantity production. As we understand it the purpose of this method of manufacturing is to reduce cost. By repeating the same processes a great many times the cost of the unit is reduced. But when the article manufactured is food for human consumption, the first requirement is wholesomeness, and wholesomeness can only be assured by meticulous attention to every detail of preparation.

This was no ordinary case of food spoilage—it was apparently one of food infection. The

Somerville pie was appetizing in appearance and it was palatable. There was nothing to warn the consumers of the lurking danger. There are no ready tests for the integrity of such freshly prepared foods, and therefore there is all the more reason why far greater attention should be paid to safeguarding the quality of the food than to organizing the many mechanical features of quantity production. Increased production means increased distribution, and increased possibility for harm. So much greater is the responsibility and so much greater should be the care that is exercised in food preparation.

A CALL TO ARMS

THE epidemic at Lee with its trail of suffering, sickness and death is still fresh in our minds, and as a result of it we have been forcibly reminded of similar milk-borne epidemics in the past. A number of serious outbreaks of septic sore throat have been traced to infected milk; scarlet fever, diphtheria and typhoid fever have resulted from the tremendous disease-carrying properties of milk and it is not so many years ago that a number of cases of bovine tuberculosis in children were attributed to milk from a certified farm. The conclusion is obvious. Raw milk is not a safe food for child or adult.

We cannot, unfortunately, look for any general co-öperation on the part of milk producers. Economic, rather than humanitarian policies influence them. They have bombarded the public with propaganda regarding the food value of milk, and have given rise to a false conception of its value with their quart-a-day slogan. As regards the proper safeguarding of milk, however, their enthusiasm is not so highly pitched, for the safeguarding of milk costs money. Also, either their ideas on this point are not so clear as they might be or they are willfully confusing an issue, for already other milk producers in the vicinity of Lee are proclaiming their use of tuberculin testing as a factor in the prevention of septic sore throat!

Dr. Bigelow, our Commissioner of Public Health, is firm in the conviction that the milk sold in Massachusetts should be pasteurized. THE NEW ENGLAND JOURNAL OF MEDICINE is firm in the conviction that Dr. Bigelow is right. *No other method of safeguarding milk can take the place of pasteurization or sterilization.* Tuberculosis will, and has crept into the most rigidly inspected herds. The inspection of milk handlers is costly and cumbersome and does not serve any very useful purpose, for medical art cannot always detect the disease carrier in time to prevent him from spreading his infection.

The physicians of Massachusetts carry weight with the laity who comprise their practices. This influence *must* be brought to bear upon one of the most important public health problems which now confront us. Raw milk is almost never entirely safe. Properly pasteurized milk is almost always safe. In spite of certain hardships which will inevitably result from an enforced change of methods, we must put ourselves squarely behind this issue and not relax in our activities until pasteurization becomes a universal factor in milk marketing in Massachusetts.

THE PAPER BY MARION DOUGLASS, M.D.*

ATTENTION is directed to the article "Tumors of Endometrial Origin" in this issue of the JOURNAL, in which the history, operative findings and histological reports of six cases are set down together with a discussion of the possible origin of these tumors.

To Sampson is largely due the credit of demonstrating at least the similarity of these tumors to endometrial tissue, and of describing their clinical course and features. Whether or not they are the result of transtubal migration of endometrial tissue or direct implantation of this tissue after Caesarian Section or other uterine operations may be still debated by histopathologists, nevertheless the work of Sampson cannot be too highly commended in that he has demonstrated the relation of this tumor to the endometrium, their not infrequent relation to the menstrual cycle and the fact that regression in the tumor may often be brought about by bilateral oöphorectomy.

*Page 305.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

DOUGLASS, MARION. B.A., M.D., Johns Hopkins, 1921. Instructor in Gynecology, Western Reserve School of Medicine; Gynecologist to the Lakeside Hospital. Her subject is: "Tumors of Endometrial Origin". Page 305. Address: Lakeside Hospital, Cleveland, Ohio.

RACKEMANN, FRANCIS M. A.B., M.D., Harvard, 1912. Instructor, Harvard Medical School; Chief of Medical Out-Patient Department, and Chief of Anaphylaxis Clinic, Massachusetts General Hospital. Address: 263 Beacon St., Boston. Associated with him is:

SCULLY, MARGARET A. B.S. Chemist, Anaphylaxis Laboratory, Massachusetts General Hospital. Address: 3 Fairview St., Newton, Mass. Their subject is: "Studies in Asthma. III. "The Use of Vaccine in Asthma and in 'Colds' ". Page 314.

HOMANS, JOHN. M.D. Harvard, 1903. F.A.C.S. Surgeon to the Peter Bent Brigham Hospital; Assistant Professor of Surgery, Harvard Medical School. Address: 721 Huntington Ave., Boston. Associated with him is:

POWERS, JOHN H. M.D. Harvard, 1925. Associate in Surgery, Peter Bent Brigham Hospital. Address: Harvard Medical School, Boston. Their subject is: "Appendiceal Ab-

scess: Treatment of the Appendix". Page 319.

BURNETT, FRANCIS L. B.S., M.D. Harvard, 1906. Official Appointment in Research, Nutrition and the Control of Health; (1) After Eczema and Psoriasis at Massachusetts General Hospital, (2) After Iritis, at Massachusetts Eye and Ear Infirmary, (3) and after Arthritis at Peter Bent Brigham Hospital. His subject is: "The Control of Health After Eczema and Psoriasis". Page 321.

BOSTON MEDICAL LIBRARY

MEDICAL EDUCATION IN COLONIAL TIMES

OUR Puritan ancestors came to this country with sparse provision for their medical care. A few physicians were among their number and some of the clergy, in order that they might eke out a better livelihood, put to use such parts of the general training of a cultured clergyman of that period as would enable them to be of service to the community in which they lived, in the care of the sick. This was in accord with the traditions of medicine since the earliest times. The majority of these immigrants were intelligent men and women and though their religion and their civic life were the two main objects which they sought opportunity to order in accord with their beliefs, still they were keenly appreciative of the advantages of a liberal education and early set about to make this possible for the youth of the Colonies.

Harvard College was founded in 1638, William and Mary in 1691, Yale in 1700, Princeton in 1746, University of Pennsylvania (Philadelphia College) in 1754 and Kings (now Columbia) also in 1754, but it was more than 150 years after Plymouth was settled before any provision was made for the establishment of institutions for the teaching of medicine or any rules laid down for the regulation of the practice of medicine. Physicians travelled one and two hundred miles to perform capital operations so few were there qualified to do these and as late as the middle of the eighteenth century a patient crossed to England in order to have a lithotomy performed by Dr. Cheselden of London. There were few agencies for the dissemination of knowledge of whatever kind, for the first newspaper was not published until 1704 when the Boston News Letter was issued. Then followed in 1719 a newspaper in Philadelphia, another in New York in 1725, one in Charleston, South Carolina, in 1730, in Rhode Island in 1732, Connecticut in 1755 and in New Hampshire in 1756.

No medical journal was published before the close of the eighteenth century. It was natural that those among the youth of the Colonies who felt the urge to study medicine should have crossed the water to take their degrees at Edinburgh or other foreign institutions.

There were no medical libraries and it was difficult to secure medical books. The first physician of whom there is any account in the Massachusetts Bay Colonies was Dr. Samuel Fuller who came over in the first ship, practiced in Plymouth, was sent at one time to the Salem Colony by Governor Endicott when that colony was in need of medical advice but returned to Plymouth where he died, a victim of an epidemic of some sort that broke out among the natives and the Colonists.

The first medical pamphlet published in America that is on file anywhere, was entitled "A Brief Guide in the Smallpox and Measles". The author was Thomas Thacher who was the first pastor of the Old South Church in Boston. He was also educated for a physician. The date of this publication was 1677. Harvard took the initial steps toward the establishment of a University Medical School when it accepted a bequest of one thousand pounds from Dr. Ezekiel Hersey of Hingham, (who died in 1770) and on the death of his widow of a like sum; five hundred pounds were also given by Dr. Abner Hersey of Barnstable, a brother of Dr. Ezekiel Hersey, and by Dr. John Cuming of Concord. Later, William Erving, Esq., of Boston bequeathed one thousand pounds. With this as a nucleus an Institute for the study of Anatomy and Surgery was founded in 1782 in Cambridge. Dr. John Warren provided a plan for a medical course and he with Dr. Benjamin Waterhouse and Dr. Aaron Dexter were the first professors of Anatomy, Theory and Practice and Chemistry, respectively. George Holmes Hall and John Fleet were the first admitted, in course, to the degree of Doctor of Medicine at Harvard, in 1788. The advantages of having the school in Boston became so apparent to the Overseers of Harvard that in 1810 it was removed to that city and the Massachusetts Legislature made a grant of twenty thousand dollars for a building, which was erected in 1815, and was located on Mason Street near Boston Common and the Mall.

The faculty from their private funds provided a library for the medical students which was merged with that of the Boston Medical Library which had accumulated some two thousand volumes making a total of three or four thousand volumes. These were arranged in a room occupied by the Massachusetts Medical Society in this same building. The lectures commenced on the third Wednesday in October each year and continued for three months. Two courses of lectures must have been followed under each of the Professors in the Medical department of the University where they were trained and they must have spent two years in following their clinical practice during the course of these lectures. Further they must study two years under the direction of a regular practitioner of medicine and allow a third year to elapse before they could be examined for their

degrees. Those who did not have a University degree must have satisfied the faculty of their knowledge of the Latin language and experimental philosophy. They were obliged to stand examination in Anatomy, Surgery, Midwifery, the Theory and Practice of Medicine, Chemistry, Materia Medica and Clinical Medicine. In addition each accepted candidate for the degree of Doctor in Medicine was obliged to prepare a dissertation upon a medical subject and submit it to the Faculty two weeks before he was called upon to read and defend it in the Philosophy Chamber at Cambridge, before the governors and instructors of the University and such members of the Massachusetts Medical Society as might elect to be present. This occurred in the August following the February in which they took their final examinations. If the candidate was successful his degree was conferred at the ensuing commencement. The Massachusetts Medical Society was rigorous in its selection of members and performed the functions of the Board of Registration as we now know it. In Boston the student of medicine of the early part of the nineteenth century had the advantage of access to the Clinics of the Massachusetts General Hospital which was incorporated in 1811 but was not open for patients until 1818.

The New England Journal of Medicine and Surgery was established in Boston in 1812 contributing to the advancement of medical knowledge as it has continued to do under the different names by which it has been known.

The legislature of Massachusetts has granted a number of charters at various times for the founding of educational institutions under the provisions of which medical subjects might be taught. In whose hands many of these now rest is not known. Among these was that of the Berkshire Medical Institute founded under the Charter of Williams College and located at Pittsfield where it was carried on for a short while; this was in 1822. In New Hampshire the Trustees of Dartmouth College established a medical school in 1798 and for twelve years Dr. Nathan Smith gave all the courses, except two in Chemistry in which subject he was assisted by other members of the faculty. Vermont had two institutes as they were called in the early days, for the study of medicine. One was known as the Vermont Academy of Medicine and was established in 1818 at Castleton and the other, the Medical School of Vermont at Burlington, in 1822.

In 1820 the Medical School of Maine was founded in Brunswick. In Rhode Island the Medical Department of Brown was established in 1821 with three Professors, Levi Wheaton in Theory and Practice of Physic and Obstetrics, John deWolf in Pharmacy and Chemistry and Usher Parsons in Anatomy, Physiology and Surgery. This was about the size of the medical faculties of those days; sometimes six or eight and as few as one in the case of Dartmouth.

In 1810 Yale obtained a Charter from the Connecticut Legislature for a Medical Institute and began to give lectures in 1813. In New York the Medical Department of Kings College, organized in 1768, conferred its first medical degrees upon Samuel Kissam and Robert Tucker; these were the first medical degrees granted in America, antedating, however, by only a short time those given in Philadelphia. The history of medical education in New York in the early days was turbulent. Columbia was first in the field in 1792 but the Regents granted a Charter to the College of Physicians and Surgeons in 1807. Later, in 1811 a new Charter was given the College of Physicians and Surgeons with a view to affecting a union with Columbia which was brought about in 1813 under the joint presidency of Dr. Samuel Bard. But even then, and for many years thereafter rivalries and bickerings characterized the relations of these two schools. The faculty of medicine of the University of New York that voluntarily resigned in order to clear the atmosphere there, went over to New Jersey in the early part of the nineteenth century and started a medical department at Rutgers, formerly Queens College, in 1770. Little is known about the outcome of this venture except that the Rutgers College Medical School was eventually located for a time in New York City in a building erected close to the New York Hospital.

In Pennsylvania from the latter part of the seventeenth century and early eighteenth there were a goodly number of well educated and enterprising medical men. Among these were Dr. Thomas Wynne and his brother who were about the first physicians to settle in Philadelphia in 1682.

Dr. William Shippen and Dr. John Morgan conceived the idea of starting a medical school in Philadelphia and upon Dr. Shippen's return from study abroad in 1762 he began a course of lectures on Anatomy and Midwifery. In 1765 he was joined by Dr. Morgan just then returned from European study. In 1768 Dr. Kuhn was appointed to the professorship of Botany and Dr. Benjamin Rush to that of Chemistry. Shortly after this the trustees of the College of Philadelphia confirmed by official action the organization of this, the first medical school in America. Benjamin Franklin was president of the College when this took place.

Maryland came into line with a medical school in Baltimore in 1807 the result of the energy of Dr. John B. Davidge. This was known as the College of Medicine in Maryland.

A medical school was established in Winchester, Virginia in 1826, known as the Medical School of the Valley of Virginia. One of its early faculty members was H. H. Maguire which suggests that the name of Maguire may have been a name to juggle with in Virginia in the colonial days as it is even now. South Carolina in colonial times had a spendid group of medical practitioners, all European trained, and in no part of the country was there more medical

activity than among this group between 1768 and 1778. Perhaps the most distinguished of them was Dr. David Ramsay. A medical school was founded in Charleston in 1824.

The year 1818 saw the establishment of three other medical schools viz. the Jefferson in connection with Jefferson College in Philadelphia with one of Nathan Smith's sons on the faculty; the Medical College of Ohio at Cincinnati and the Transylvania Medical School at Lexington, Kentucky.

The United States Congress authorized the establishment of a school in Washington, D. C., in 1824 known as the Columbia Medical School.

In 1825-26 there were enrolled in the colleges above mentioned, i.e. in the medical departments, 2017 medical students. The University of Pennsylvania led in numbers having 480 enrolled; next came the Medical School of Transylvania with 235 and third the College of Medicine of Maryland with 215. Dartmouth had 80; Harvard 130 and Yale 82 at this time.

With over two thousand students preparing to practice medicine and an awakened public interest in the support of hospitals for the care of the poor, primarily, the medical needs of the rapidly growing country were being pretty well taken care of by 1825 and the medical press was becoming more and more active. The following are the names and dates of first issuance of the periodicals devoted to medicine in the Country at this period:

Philadelphia Medical Physical Journal	1804
Philadelphia Medical Museum	1805
Baltimore Medical and Physical Recorder	1808
New York Medical and Philosophical Journal and Review	1809
American Medical and Philosophical Register	1810
Eclectic Repertory	1811
New England Journal of Medicine and Surgery	1812
American Medical Recorder	1818
American Journal of Science and Arts	1821
New York Medical and Physical Journal	1822
Western Medical Reporter	1822
Hartford Analictic Journal of Medicine and Surgery	1823
Boston Medical Intelligencer	1823
Medical Review and Analictic Journal	1824
New York Monthly Chronicle of Medicine and Surgery	1824
Carolina Journal of Medicine and Science	1825
North American Medical and Surgical Journal	1826
Philadelphia Monthly Journal of Medicine and Surgery	1827

There were many other activities set in motion by the founding of the medical schools having a great deal to do with putting medicine on its feet, one of the chief of which was the publication of a Pharmacopoeia. This hasty review of the situation in this country at the end of the nineteenth century, in respect to the education of Physicians, will give anyone interested to pursue the subject further a point from which to depart in his studies.

MISCELLANY

TUBERCULOSIS ABSTRACTS

BULLETIN NATIONAL TUBERCULOSIS ASSOCIATION

No more hopeful ray of sunshine has ever come to illumine the dark kingdoms of disease than that introduced into the path of the consumptive through the discovery of artificial pneumothorax. Recommended on theoretical grounds nearly a century ago, so soon, indeed, as the elasticity of the lung was first clearly recognized, first practiced some sixty years later, but again forgotten, it is only during the present decade that it is reaching that place of supreme importance in phthisis-therapy which is undoubtedly its due.—*Clive Riviere.*

ARTIFICIAL PNEUMOTHORAX

Artificial pneumothorax is a surgical procedure whereby an inert gas is injected into the pleural cavity. This causes the lung to collapse, since normally the pleural cavity is merely a potential one with negative atmospheric pressure. When there are severe or extensive tuberculous lesions of the lung which fail to respond to the usual methods of treatment, artificial pneumothorax has proved its value. Collapse puts the lung at rest, retards the growth of tubercle bacilli and stimulates the rapid growth of fibrous tissue. It is especially indicated when the disease is limited to one side and when the condition has failed to respond to the usual methods of treatment. If not more than one-half of one lobe of the good lung is involved, collapse of the worst lung is indicated. In recurring pulmonary hemorrhage, the induction of artificial pneumothorax is a God-send. The procedure is often of value in pulmonary abscess and in uni-lateral bronchiectasis.

The apparatus for collapsing the lung consists essentially of two glass jars, a manometer, a large calibred needle and the necessary tubing. The puncture is commonly made after novocaine anesthesia, at about the level of the fifth to seventh interspaces in the mid-axillary, or anterior axillary, line. When the needle has entered the pleural cavity, the tube is attached to the manometer, which should register a distinctly negative pressure with oscillations corresponding to the respirations. A very small quantity (10-15 cc.) of gas is allowed to flow into the pleural cavity. This is repeated every minute or so, meantime watching the manometer, until the patient has received a total of 150-250 cc. The needle is then withdrawn and the wound sealed with collodion. Two or three days later, a refill of gas is given. Complete collapse should usually extend over a period of some three to five years, depending on the rate of healing of the lesions.—*Modern Aspects of the Diagnosis and Treatment of Tuberculosis, J. A. Myers.*

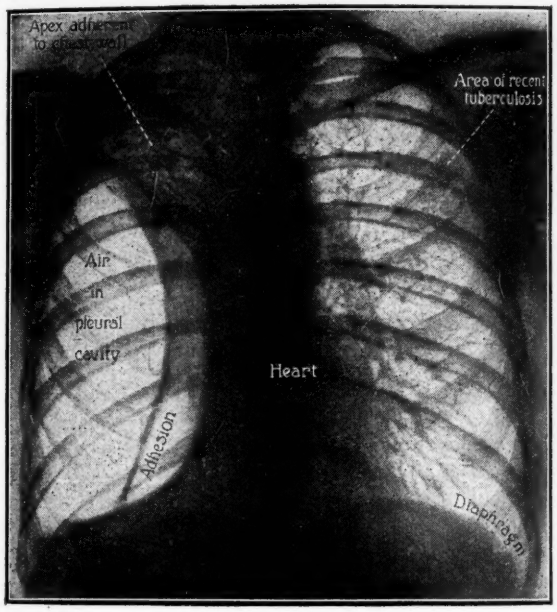
RESULTS OF ARTIFICIAL PNEUMOTHORAX

Peters reports as of July 1, 1925, a series of 273 patients at the Loomis Sanatorium, in whom therapeutic pneumothorax was administered or attempted during the years 1911-1923 and carefully followed up thereafter. Cases were divided for purposes of study into three groups; i. e. satisfactory collapse,

incompletely effective collapse, temporary or undetermined collapse.

In the earlier group (1911-1917) unfavorable cases predominated and a satisfactory collapse was less often secured. From 1918 on, about three times as many patients as formerly have received this treatment and for longer periods.

At least 85 per cent. of cases had far-advanced disease. Thirty-two per cent. were "desperate last resort" cases. Classified according to clinical type or course, about 10 per cent. were of acute phthisis, 30 per cent. of very chronic forms, and 60 per cent. intermediate, subacute or subchronic. Almost all could be regarded



From X-ray plate showing extensive tuberculosis of right lung and collapse following artificial pneumothorax. (Courtesy J. A. Myers.)

as clinically active, and all had symptoms or disability of some sort, dependent on their tuberculosis.

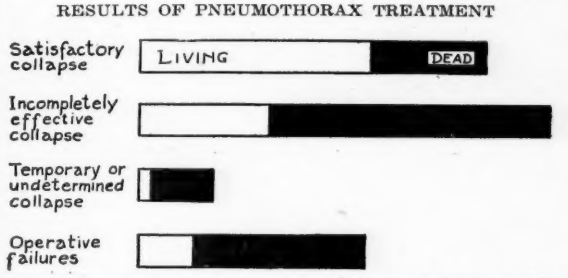
About 33 per cent. of all cases in whom this procedure was attempted obtained a satisfactory or effective collapse of the diseased lung. In about 20 per cent., it was found impossible to induce any pneumothorax whatsoever. In the remainder, or 46 per cent., various degrees of collapse, more or less effective or temporary, were obtained. Extremely chronic cases and "desperate last resort" cases are unlikely to obtain a satisfactory collapse. On the average, the shorter the duration of symptoms, the more likely is an effective collapse to occur, but exceptions happen frequently. Very acute cases are more likely to be associated with extensive pleuritic adhesions than the less acute types.

Among the various reasons for discontinuing pneumothorax, obliterative adhesions with contraction of the pleural space played an important role, also unsatisfactory clinical response, due in most cases to an ineffective or incompletely effective collapse. Progression or exacerbation of disease in the contralateral lung was a somewhat less frequent reason than the foregoing for the cessation of treatment, assuming great importance in the "desperate last resort" cases and in the group of acute phthisis.

Pleuritic complications were encountered in at least half of those treated by pneumothorax, serous pleurisies being most common. The more serious complications were most frequently associated with the more serious types of disease and those in which pathological conditions prevented a satisfactory collapse.

Of other important complications developing during or after the course of treatment, intestinal were most frequently noted; in about 4 per cent. Tuberculosis meningitis occurred in over 4 per cent. of the "satisfactory collapse" group, being, of course, fatal. There were no cases of gas embolism nor serious "pleural reflex" or shock.

Progression or exacerbation of disease in the contralateral lung has been recorded in about 25 per cent. of cases under pneumothorax, and improvement



Status of 257 patients on July 1, 1925, treated by artificial pneumothorax from 1911 to 1923 at Loomis Sanatorium.
White, living; Black, dead.

in about 7 per cent., leaving about two-thirds *in statu quo*. Among the "satisfactory collapse" group alone, more showed improvement in the contralateral lung than the reverse.

The results obtained vary greatly with certain factors, most important of which is the obtaining and maintaining of a satisfactory collapse of the diseased areas for a sufficient period of time. The striking effect of a satisfactory pneumothorax in bringing about the disappearance of tubercle bacilli from the sputum commands attention. The proportion of apparently durable end-results appears to bear a very close relation to the permanent disappearance of tubercle bacilli from the sputum.

Of all patients in whom any pneumothorax at all was induced, 42 per cent. were living at the end of two to fourteen years, and 24 per cent. were reported in satisfactory condition. Of the group with satisfactory collapse, 61 per cent. were living, and 45 per cent. were reported in satisfactory condition. *The end-results in the pneumothorax group were nearly twice as good as when no pneumothorax was possible.* Actually, the "satisfactory collapse" group accounts for most of the difference: when a satisfactory collapse was obtained, the chances of being alive and in satisfactory condition after two to fourteen years were almost trebled and the chances of being in satisfactory condition exactly trebled.—*Artificial Pneumothorax at the Loomis Sanatorium over Fourteen Years, Andrew Peters, American Review of Tuberculosis*, Vol. XVII, April, 1928, pp. 348-373.

"All in all, artificial pneumothorax represents by far the greatest advance yet made in the special treatment of pulmonary tuberculosis."—*Allen K. Krause.*

MAINE MORTALITY STATISTICS: 1927

The Department of Commerce announces that the 1927 death rate for Maine was 1,382 per 100,000 population as compared with 1,437 in 1926. This decrease in 1927 is largely accounted for by decreases

in the death rates from influenza (from 60 to 39 per 100,000 population), pneumonia, all forms (from 106 to 85), nephritis (from 116 to 103), and diabetes (from 24 to 21).

Increases in 1927 are shown in the death rates from diseases of the heart (from 253 in 1926 to 261 per 100,000 population), and cancer (from 134 to 137.)

ANNUAL REPORT OF THE LYNN CANCER CLINIC*

The Lynn Cancer Committee presents herewith a summarized report of the activities of the Lynn Cancer Clinic for the first year of its operation. The points of chief interest appear to be:

1. The number of positive cases seen in relation to the estimated number of cases in Lynn
2. The number of positive cases which had previously seen no physician
3. The sex distribution
4. The influence of newspaper publicity
5. The small number giving history of chronic past illness
6. The symptoms which brought patient to clinic
7. The duration before consultation
8. The promptness of treatment after visit to clinic

In addition to the foregoing, I think that attention may be called to the importance of clinic follow-up work, in which respect I feel that our clinic has been very fortunate, and perhaps modesty should not prevent reference to the recognition of the clinic by the Lynn Welfare Federation.

Total number of patients	376
Cancer	81
Precancerous	77
Other conditions	218

CANCER

Age—	
Under 35	2
35-39	4
40-44	2
45-49	4
50-54	6
55-59	14
60-64	11
65-69	9
70-74	18
75-79	6
Over 80	5
Sex—	
Male	45
Female	36
Chronic Past Illness	
Stomach	1
Indigestion	5
Gas	1
Female Genitals	
Discharges	1
Abnormal menses	1
Bowel Trouble	
Piles	6
Bloody mucous stools	3
Constipation	8
Breast trouble	5
Nervous Trouble	
Headache	1
Nervousness	2
Skin	6
Respiratory	
Chronic cough	2
Frequent colds	1
Bladder	
Painful urination	1
Heart	4
Rheumatism	2
Blood poisoning	1
Swollen glands	1
Mouth	1
Eyes	1
None	32
Unknown	9
Symptoms that first brought patient to clinic	
Swelling	34
Ulceration	18
Discharge	11
Pain	23
Deformity	1
Loss of weight	1
Itching	6
Scaly skin	6
Unknown	2
Organ affected	
Lip	6
Tongue	3
Throat	2
Cheek	2
Intestine	1
Rectum	1
Uterus	10
Skin	36
Bladder	1
Neck	2
Prostate—others of this class	2
Breast	11
Cancer unspecified—Sarcoma	4
Interval between appearance of symptoms and first visit to doctor.	
Under 4 weeks	11
4- 8 weeks	9
9-13 weeks	4
4 months	4
5 months	4
6- 8 months	12
9-12 months	12
13-17 months	4
18-23 months	2
Over 2 years	17
Unknown	2
	81
Interval between appearance of symptoms and visit to clinic.	
Under 4 weeks	1
4- 8 weeks	4
9-13 weeks	3
4 months	3
5 months	2
6- 8 months	14
9-12 months	9

*Submitted to the State Department of Public Health.

13-17 months	5
18-23 months	6
Over 2 years	32
Unknown	2
	81

Interval between visit to clinic and institution of treatment.

Same day	5
One day	7
Two days	1
Three days	3
Four days	11
Five days	7
Seven days	5
Eight days	1
Nine days	1
Ten days	3
Eleven days	1
Twelve days	1
2 weeks	8
3 weeks	1
1 month	7
5 weeks	1
2 months	1
4 months	1
5 months	2
6 months	3
7 months	1
No treatment advised	5
Died before treatment	2
Had no treatment	3
	81

Died:

Other causes	1
Cancer	3

Of the 376 patients who came to the clinic advice and aid was given to 77 who were considered to be precancerous as follows:

Operation advised	62	
Operation known to have been done		26
Radium advised	10	
Radium used		5
X-ray advised	5	
Treated by X-ray		5
Precancerous patients	77	36
Cancer	81	
Other conditions	218	
Total	376	

Respectfully submitted,
Lynn Cancer Committee,
WILLIAM T. HOPKINS, M.D., *Chairman.*
ORRIN C. BLAIR, M.D.
NATHANIEL P. BREED, M.D.
EUGENE M. DOLLOFF, M.D.
JOHN W. TRASK, M.D.

NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS

The annual report of the National Society for the Prevention of Blindness, recently published, comments favorably on the progress that has been made as a result of twenty years of organized effort to reduce the frequency of blindness in America.

The greatest reduction has been made in ophthalmia neonatorum, due largely to the adoption of State laws requiring prophylactic treatment. Pre-school eye tests and pre-school clinics have been organized, and special "Sight-Saving Classes" in public schools have been established in 80 cities. Progress has been made in the study of trachoma, and several efforts are being made to reduce occupational eye hazards to the minimum.

LOW INFANT MORTALITY IN 1927

A new low figure, according to the Bureau of the Census, was reached in infant mortality in the year 1927. In 1916 101 out of every thousand live born infants died during the first year of life. In 1924 the rate was 71—a previous low figure until the rate of 64, for 1927, was recorded.

RÉSUMÉ OF COMMUNICABLE DISEASES REPORTED TO THE MASSACHUSETTS DEPARTMENT OF HEALTH JULY, 1928

GENERAL PREVALENCE

The total number of cases of communicable diseases for July was not unusual.

Both influenza and lobar pneumonia continue to have a high incidence for this time of the year.

The reported incidence of chickenpox, German measles, measles, mumps, scarlet fever and pulmonary tuberculosis was within endemic limits.

The incidence of poliomyelitis for the state as a whole is normal, although there have been one or two localized outbreaks.

A new low record for July was reached in the incidence of diphtheria, non-pulmonary tuberculosis and typhoid fever. The reported incidence of whooping cough was low.

RARE DISEASES

Anterior poliomyelitis was reported from Arlington, 1; Boston, 4; Northampton, 1; Waltham, 9; Watertown, 6; total, 21.

Dog-bite requiring anti-rabic treatment was reported from Billerica, 3; Boston, 13; Braintree, 3; Clinton, 2; Danvers, 1; Everett, 1; Gloucester, 5; Lowell, 19; Lunenburg, 2; Melrose, 1; Peabody, 1; Revere, 4; Rockport, 1; Winthrop, 4; total, 60.

Dysentery was reported from Chelsea, 2; total, 2.

Encephalitis lethargica was reported from Boston, 1; Lawrence, 1; Melrose, 1; Pittsfield, 2; total, 5.

Epidemic cerebrospinal meningitis was reported from Amherst, 1; Boston, 2; Chelsea, 1; Fairhaven, 1; Fall River, 1; Lawrence, 1; Methuen, 1; Newton, 1; total, 9.

Malaria was reported from Boston, 2; Cambridge, 1; Chelsea, 2; Malden, 1; Quincy, 1; Reading, 1; Wakefield, 1; total, 9.

Pellagra was reported from Peabody, 1; total, 1.

Septic sore throat was reported from Becket, 2; Boston, 11; Braintree, 1; Buckland, 1; Chester, 1; Hampden, 2; Haverhill, 1; Holyoke, 1; Lee, 147; Lenox, 10; Lexington, 2; Lynn, 1; Mansfield, 1; Marshfield, 4; Melrose, 2; Middleboro, 1; North Adams, 3; Pittsfield, 17; Somerville, 2; Spencer, 1; Springfield, 4; Stockbridge, 4; Tyringham, 15; Westfield, 1; Weymouth, 1; Williamstown, 6; Worcester, 1; total, 243.

Smallpox was reported from Plymouth, 1; total, 1.

Tetanus was reported from Boston, 1; Chicopee, 1; Northampton, 1; Pittsfield, 1; total, 4.

Trachoma was reported from Boston, 1; total, 1.

Trichinosis was reported from Malden, 1; total, 1.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

Disease	Cases in entire population				Case rates per 100,000 population		
	July, 1928	July, 1926	Prosodemic index	Epidemic index	July, 1928	July, 1927	Expected rate‡
All causes	4,479	4,538	—	—	103.6	106.3	—
Anterior poliomyelitis	21	22	27*	.8†	.5	.5	.6
Diphtheria	163	264	274*	.6†	3.8	6.2	6.3
Measles	1,350	1,023	1,583*	.9†	31.2	24.0	36.6
Pneumonia, lobar	142	154	99*	1.4†	3.3	3.6	2.3
Scarlet fever	317	643	347*	.9†	7.3	15.1	8.0
Tuberculosis, pulmonary	451	439	340*	1.3†	10.4	10.3	7.9
Typhoid fever	28	30	44*	.6†	.6	.7	1.0
Whooping cough	405	360	735*	.6†	9.4	8.4	17.0
Chickenpox	290	423	—	—	6.7	9.9	—
German measles	25	50	—	—	.6	1.2	—
Influenza	75	11	—	—	1.7	.3	—
Mumps	164	338	—	—	3.8	7.9	—
Tuberculosis, other forms	52	63	—	—	1.2	1.5	—

*This Index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus, 2.0 would indicate twice the expected number of cases, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927, issue of the BOSTON MEDICAL AND SURGICAL JOURNAL.

‡Calculated from the Prosodemic Index.

CORRESPONDENCE

FURTHER DISCUSSION OF THE PROBLEMS OF INDUSTRIAL ACCIDENT INSURANCE

To the Editor of the NEW ENGLAND JOURNAL OF MEDICINE:

At the last Annual meeting of Massachusetts Medical Society, the genial and much honored medical adviser of the Industrial Accident Board discussed at length the workings of the Workmen's Compensation Act. The information must be helpful to all those most interested. There is no controversy over the fact that in most respects the Act has been a success and the statistics quoted in the latter part of the address are both impressive and worth due consideration. There is however, good evidence that most of the hospitals outside the teaching hospitals and perhaps some of the larger municipal hospitals, doing two-thirds of the work for injured industrial patients are fully convinced that fees received for hospital care and medical service are inadequate. The assumption is made that the hospital rate charged the insurance companies should be the rate charged the general public and that the charge for medical services should in a large measure be determined by the personal resources and station in life of the individual employee. It is also the assumption of the medical adviser that the burden is carried by the industries of the State and that unless staff doctors and the hospitals bear a substantial share of this burden, the humanitarian purposes of this Act will be jeopardized.

The viewpoints of "charity" and "profits" are not the same. The charitable hospitals of the State provide one dollar's worth of service for seventy-cents or less of income from beneficiaries. The stock insurance companies for every dollar of service rendered the injured worker, collect $1.66 2/3 in premiums. Who bears the burden? Who reaps the benefit? The rights of hospitals and staff doctors under the present law are one thing, and the duty of trustees of endowed and contributed charity to guard its proper use, is another thing. The suggestion was made in this address that the Department of Public Welfare should be sought in fixing a reasonable cost rate for hospitals. The criticism is made that the data available makes it difficult to establish a reasonable cost rate for hospitals, which is likely reasonably true. It is also true that the data published makes it equally hard to determine the actual and reasonable cost of Workmen's Compensation.

Before we use unkind adjectives applied to a supposedly small group of essential medical workers, let *all* the facts be known and let all issues be stated fairly. Is how much has been paid for hospitals and medical service an issue? Is not the question rather whether the service paid for up to date, $24,000,000, is adequate and was the amount paid reasonable? Is the present issue the status of the uninsured worker or rather the status of the worker insured and his present rights under the law? Is the issue how much the charity coffers contain, or rather for whom these charity funds can be legitimately applied? The issue is not so much free service by hospitals and staff doctors, as whether only a few should bear the burden which the Compensation Act intended should be borne through insurance by the far reaching consuming public.

$24,000,000 in 16 years is a large sum, but the toll of the $150,000,000 collected by the insurance companies is $60,000,000, two and one-half times as much as that paid for hospitals and medical service. $4,500 paid for a death benefit represents $7,500 paid by the policy holder. $50 for a hernia operation represents $83.33 in premiums. $22 weekly paid to a hospital represents $36.66 in premiums. $18 a week for lost time represents $30 collected.

The oft praised and often quoted Special Commission for 1926, see page 10 of the report of the Commission, was unanimous in the opinion that hospitals should not be forced to do charity, and page 12 that hospital trustees should determine how much free service staff doctors should render their local community. Two members advocated the abolition of the 17½% commission for workers by making

the law compulsory, while one recommended a monopolistic State Fund. The Actuarial Audit of the Ohio State Fund, 1925, pages 18 and 19, says, "For every dollar of compensation benefit and medical aid paid in behalf of the injured workman, stock insurance companies charge 61.3 cents for expenses. For every dollar of compensation benefit and medical aid paid in behalf of injured workmen in Ohio, the Ohio Fund operates at a cost of 3.8 cents for expenses. The expense cost of the Ohio Fund is therefore 1/16th of the expense of the stock insurance companies" throughout the country.

The data published by the Special Commission of 1926, page 50, indicates that 25% of the premiums by stock companies is legitimately expended for the two items, acquisition of new business 17½% and home office expenses 7½%. 25% of $150,000,000 is $37,500,000 over one and one-half times the sum paid for medical and hospital service. Using other phraseology, acquisition of new business and home office expense, neither item directly benefits the employee, is one and one-half times as valuable to the community when reckoned in dollars and cents as the humanitarian efforts of physicians and hospitals for the saving of life and limb, alleviating suffering and rehabilitating those permanently partially disabled.

The form of compensation insurance suitable for Massachusetts must be decided by her legislatures. It is also for the legislators to judge of the relative value of $24,000,000 for medical and hospital charges paid physicians and hospitals and $60,000,000 toll by insurance companies. It might help for common understanding to be told who chose the Hospital Advisory Committee, as well as the Medical Advisory Committee that formulated the rule in effect since 1914 quoted by the present Medical Adviser in the Boston Medical and Surgical Journal, Nov. 25, 1926, page 1051. Also the present personnel of this committee and when it last met. It would be helpful if it could be publicly printed how much is paid each year for medical services outside of hospitals and how much for hospital service. How much is saved annually by free service rendered by the staffs in hospitals for the benefit of either the insurance companies, or the consuming public. Also how much it would add to the insurance premiums if hospitals were paid average cost rates as well as the per cent. of premiums returned to policy holders by the Mutual companies.

Considering for a moment the bread and butter features of the situation with a little applesauce perhaps for some, let us consider for a moment who bears the burden if there is no let or hinderance to the smooth running of the Act. Up to 1925 the last published data on premium rates, by the Insurance Commission, for the last five-year period, average premium did not reach one per cent. of the pay roll. Using the data found on pages 56 and 57 of the Annual Report of the Department of Labor and Industry, 1926, we find the wages of labor equal a little over one-fifth of the value of the manufactured product. The cost of premiums based on the pay roll should add $.20 to $100 worth of product. The share of a worker earning $35 weekly if the division was equalized, would be about one penny a day, not a heavy burden for the benefits obtained.

Using the last published reports of United States Census of 1920, applied to Massachusetts conditions, it is estimated that fully 50% of the present Massachusetts population of over 18 are wage earners supporting by their earnings 75% of the population. Certainly the wage earning group contribute their proportionate share of the burden of Workmen's Compensation.

The law is definite in that the worker bears some share of the burden for lost time due to injury. On the other hand it seems very explicit that when the worker takes the risk of the loss of life, of a leg, an arm, or an eye; or permanent partial disability, he is entitled to medical and hospital service from the very instant of known injury for at least two weeks. There is nothing in the present law that suggests that either the doctors or the hospitals should bear any of the financial burden, nor is there any suggestion that the services of either are to be measured by the personal resources or station in life of the injured individual. Is not the service to be commensurate with his bodily needs in order to repair the physical damage done by his injury and rehabilitate him as far as humanely possible?

Compensation for injury is as much a burden on industry as the repair of broken down machinery, or loss by fire.

In the New England Journal of Medicine issue of June 28, 1928, Dr. W. H. Merrill under the heading "Keep the Record Straight" page 1021 suggests the absurdity of assuming that local doctors and hospitals should bear the burden of repairing the bodies of injured workers when the burden was intended to be borne by the consuming public.

Because some carpenters mend the roof covering a destitute family, free, or a mechanic repairs the pump gratis, does this service warrant the assumption that a factory owner or an insurance company could expect a similar service free? Because there is an element of human helpfulness in caring for physical injuries and physicians and hospitals do not question the financial ability of recipients before rendering emergency treatment, is there any warrant in the assumption that big business, or a state, or nation wide consuming public can divert endowed charity from its accustomed and time honored use, or draft a large group of professional workers to ease the burden caused by human lives broken through daily toil in industry?

G. M. B.

JOSEPH W. COURTNEY

Editor of the New England Journal of Medicine:

It is perhaps superfluous to make further comment on the life of Dr. Courtney, after Dr. J. J. Thomas' appreciative notice in your issue of July 19th. In view, however, of his varied accomplishment in fields outside of medicine, his originality, and his rather unique personality, it may not be amiss to record some of the impressions of a friendship for many years standing.

Dr. Courtney was temperamentally shy and self-distrustful and as happens with persons so constituted, he was peculiarly sensitive to the difficulties which life presented and equally susceptible to its amenities. This gave him a certain reserve of manner, and tendency to withdraw from social situations, which he would have graced by his rare intelligence and conversational ability. What was a loss to his friends and acquaintances was, no doubt, a gain to him, since it accentuated and gave him opportunity to develop his self-satisfying interests in a diversity of fields. Endowed with a versatile and keen mind, he was a scholar in the best sense. He had a genius for language, and the correct use of words. He

wrote with meticulous care and developed a style of expression peculiarly his own. A well-turned phrase meant much to him; there was nothing slovenly or careless in his manner of writing or speaking, whether in a medical paper or meetings, or in efforts of more formal sort. His handwriting reflected the character of his mind. He had a very particular interest in French literature; he wrote and spoke that difficult language with ease, and with a complete understanding of its spirit, and clearly was much influenced by the Gallic viewpoint. He was, for example, a satirist of no mean order and often used this somewhat dangerous method with telling effect. He delved also into the field of poetry, in which he found another means of self expression, whether in doggerel after-dinner verses or in more serious vein, as for example, in his reply to Kipling's "If". The charming verses published in this JOURNAL on the occasion of Dr. P. O'Meara Edson's death will be remembered.

In all this literary work Dr. Courtney took the keenest delight. He was a voluminous reader, a student of medical history, a collector of rare books and autograph letters of literary people, and a devotee of art. In addition to his primary interest in literature, he even found time to study etching, and attained a considerable degree of skill, and a great degree of satisfaction in its practice. Like all persons of his self-distrustful temperament, he was almost childishly appreciative of commendation and equally disturbed by criticism. Now that it is too late we may have some regrets that, absorbed in our own affairs, we did not do more to encourage and stimulate a man, whose inherent capacities we perhaps too lightly regarded. He was a most excellent neurologist, his chosen field of medical work, but much more than that, he was a man of rare scholarly attainment, and wide extra-professional interests, such as are all too infrequent among us.

E. W. TAYLOR.

RECENT DEATHS

BELISLE—DR. EUGENE SIMEON BELISLE, of Worcester, died at the City Hospital in that city August 4, 1928, of anterior poliomyelitis, at the age of 36.

He was a native of Worcester, was graduated from the public schools and from Clark University in 1912 when he went to Montpellier, France, for his medical education. There he received his M.D. from the University in 1916 and joined the French army, transferring to the First Division, A. E. F. when the United States entered the war. He was chief surgeon of the Sixth Infantry, a position he held until demobilization when he was commissioned captain in the 102nd Field Artillery, National Guard.

Dr. Belisle practiced urology. He was a Fellow of the American Medical Association and of the Massachusetts Medical Society and a member of the Conseil Franchexe, Union St. Jean Baptiste d'Amerique. He is survived by his widow who was Marie L. Denechaud.

EGAN—DR. EDWARD WINFIELD EGAN, of Onset, died at Dartmouth, Mass., August 9, 1928, aged 67. A native of Worcester he took his M.D. at Jefferson Medical College, Philadelphia in 1891. After serving as surgeon in The Pacific Mail Service and surgeon in the American Red Cross and in the First Division Hospital, Spanish American War, he settled in Buzzards Bay, Mass., later moving to Onset, where he practised medicine until his death. He was an Elk. Dr. Egan is survived by his second wife, Mrs. Ida V. Egan, and by a step-daughter, Miss Mildred Poor, of California.

OBITUARY

JOHN WARREN

1874-1928

John Warren, Associate Professor of Anatomy in the Harvard Medical School, died suddenly on July 17 last. He was the fifth in the generations of that name who have handed down the traditions of medical service from the early days of this nation, and with his death the direct medical line ends. Dr. John Warren, the brother of Dr. Joseph Warren, the General at Bunker Hill; Dr. John Collins Warren; Dr. Jonathan Mason Warren; the late Dr. John Collins Warren, the second of that name, who died only last fall—with such ancestors, known and loved by generations of Bostonians, it was almost inevitable that he, too, should follow the medical profession in one of its many branches. After graduation from Harvard College in 1896 and from Harvard Medical School in 1900, he naturally entered as an interne the Massachusetts General Hospital, which one of his family had helped to found and where his father was then Chief of the Surgical Staff. The practice of surgery did not attract him, however, and the following year he was enrolled as an Assistant in the Department of Anatomy of his old school, and thus entered definitely into his career as a teacher. As he gave his whole time to the Department, he was thrown into intimate relations with his kinsman, Dr. Thomas Dwight, then Parkman Professor of Anatomy, familiar to all older graduates of the School. This association may have aided in the development of the art of careful preparation and clear and forceful delivery of anatomical lectures, of which Dr. Warren became a master, thus following in the footsteps of his great-great-grandfather, the first Professor of Anatomy at Harvard. In lesser degree, since the two departments were then separate entities, he came under the influence of Dr. Charles S. Minot, Professor of Histology and Embryology, as is indicated by the character of two of his longer articles on the Development of the Paraphysis and Pineal Region, published in the American Journal of Anatomy.

Appointed Demonstrator of Anatomy in 1902 and Assistant Professor in 1908, he devoted himself enthusiastically to teaching and to the improvement of the methods of teaching then in use. After Dr. Dwight's death he raised a memorial fund to be used for the acquisition of specimens and other material which might be of value to the student. When he took charge of anatomical teaching as Associate Professor in 1915, he began forming a teaching anatomical museum, close to the dissecting rooms and immediately available to the students. This he named the Dwight Room. The original design was to display a series of frozen sections of the body, a method of study introduced by Dr. Dwight, so arranged that they might readily be examined and drawn; this idea was soon expanded to include many illustrative dissections, each accompanied by a photograph carefully labeled. Always a skilled dissector, he himself supplied most of the specimens

and spent much care and thought on their arrangement and availability for study. Later he and Dr. Begg, then his assistant in the laboratory, decided to utilize this material in the preparation of a book on anatomy, thereby extending the circle of students, and for the last eight years he has been engaged in the preparation of new dissections and the supervision of drawings for this purpose. Though he was not destined to see its completion, this book will, it is hoped, be published by his collaborator. A Dissecting Manual prepared by Warren and Begg has been in use for several years.

It was also natural that Dr. Warren's interests should include historical matters. His first published paper, written before his graduation, was a Sketch of the Life of John Warren, M.D., the first Professor of Anatomy in the Medical School, printed by the Harvard Medical Alumni Association. Later he became interested in the early history of the Harvard Medical School, and was able to secure prints of the different buildings where its activities had been carried on, cards of admission to the lectures then given signed by the Professor in charge, as was then the custom, and other matters relating to the early days of the School. Many hours in the Athenaeum and other libraries, and in old book shops were spent in the search. It was his intention at one time to publish the results in book form, but some slight incompleteness in the record made him decide to postpone the project. Within the last few years he became interested more widely in the history of Anatomy in general, and, with a basis of the old and valuable volumes on this subject found among the medical books of his ancestors, began collecting old anatomical works. This pursuit provided a purpose for several visits to England and the Continent, the last ending only a month or so before his death, and the acquisition of some of the rare copies which he succeeded in buying gave him the keenest pleasure. Always with the idea of broadening the scope of anatomical teaching, he was arranging for the reproduction of some of the illustrations from these old books, with portraits of their authors, to be shown in the Dwight Room to stimulate the interest of the students. This considerable collection of old anatomical volumes, together with the entire medical library of the Warren family, handed down from father to son, is now left to the Library of the Harvard Medical School, and will serve as an interesting memorial to five generations.

John Warren's administrative ability was soon recognized by the Medical School, and in 1903 he became a member of the Faculty. Since that time he has been called upon to serve on numerous Faculty Committees. In 1911, President Lowell appointed him University Marshal. Under his direction the Commencement exercises were moved from the cramped quarters of Saunders Theater to the present spacious quadrangle. Many Harvard graduates will remember the dignity which his presence lent to these yearly gatherings, even though they may not realize the thought and care necessary in their preparation.

During the War this same faculty for administration secured for him posts of considerable importance. Intensely patriotic, as became one of his family, he attended the first Plattsburg Training Camp, and at once enrolled as a Medical Reserve Officer. He was in active service in many camps—Oglethorpe, Fort Dodge—holding such positions as Sanitary Officer and Adjutant, rising to the rank of Major. He was kept busy long after the termination of hostilities, and after his discharge he retained his interest in military matters. It is in large part due to his influence that the medical unit of the Reserve Officers' Training Corps now exists at Harvard.

For many years he accompanied his father to various meetings and congresses of surgeons, at home and abroad, and made many firm friends among those who delighted to honor the great surgeon. During the last few years the father's failing health made greater demands on the son, and the care and consideration which he devoted to the invalid indicated a nobility of character that will long be remembered by his intimates.

NOTICES

UNITED STATES CIVIL SERVICE EXAMINATION

The United States Civil Service Commission announces the following open competitive examinations:

Physiotherapy Aide
Physiotherapy Pupil Aide

Applications for physiotherapy aide and physiotherapy pupil aide must be on file with the Civil Service Commission at Washington, D. C., not later than August 21, October 9, and November 27.

The examinations are to fill vacancies in the Field Service of the United States Veterans' Bureau and United States Public Health Service, and elsewhere.

Full information may be obtained from the United States Civil Service Commission at Washington, D. C., or from the secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.

UNITED STATES PUBLIC HEALTH SERVICE

TWO CHRONOLOGICAL CHANGES

Assistant Surgeon (R.) A. E. Snowe. Relieved from duty at Marine Hospital, Stapleton, N. Y., and assigned to duty at Marine Hospital, Boston, Mass. June 28, 1928.

Surgeon Paul Preble. Directed to proceed to Augusta, Maine, from Baltimore, Md., and also to make repeated trips from Augusta, Me., and return, to Concord, New Hampshire, and Burlington, Vermont, and such other places as may be necessary in these three States, and stop enroute at Providence, R. I., for conference in connection with studies of administrative health practice. July 2, 1928.

NOTICE OF MEETING

VIth CONFERENCE OF THE INTERNATIONAL UNION AGAINST TUBERCULOSIS

The VIth Conference of the International Union against tuberculosis will be held in Rome from September 24th to September 28th inclusive. The following reports will be discussed: *Filterable elements of the tubercle virus* (by Prof. Albert Calmette); *The diagnosis of infantile tuberculosis* (by Prof.

Rocco Jemma); *Antituberculosis organization in rural districts* (by Prof. William Brand).

Other lectures will be delivered by Prof. Eugenio Morelli on *Forlanini and the pneumothorax in the treatment of pulmonary tuberculosis;* the other by Prof. Ludolf Brauer, *The surgical treatment of pulmonary tuberculosis,* and a third one on *Obligatory insurance against tuberculosis in Italy.*

A professional tour will afterwards be taken to the Italian antitubercular health resorts in Valtellina and the Upper Adige.

Fees: Membership fee lit. 100; ladies lit. 50; travelling fee lit. 350 *(all included).*

The Italian State Railway Company has on this special occasion kindly granted a discount of 50% on the railway rates from the frontier to Rome.

All applications must be addressed to the Hon. Secretary of one's own National Antitubercular Association. The General Secretary's Office of the VIth Conference in Rome is at N. 12, Via Toscana. The programme containing all detailed information and particulars will gladly be sent upon application.

SOCIETY MEETINGS

August 13-18—University of Southern California, Los Angeles, Institute of Municipal Administration. Detailed information on page 253, issue of August 2.

September 10-14—American Electrotherapeutic Association. Complete notice appears on page 165 of the issue of July 19.

September 24-28—Sixth Conference of the International Union Against Tuberculosis. For complete notice see page 349.

October 15-19—Interstate Post Graduate Association. Complete notice on page 1025, issue of June 28.

December 3-7—Radiological Society Convention. Detailed notice appears on page 712, issue of May 17.

DISTRICT MEDICAL SOCIETIES

Barnstable District Medical Society

Schedule of Meetings: August 2, 1928, November 1, 1928, February 7, 1929, May 2, 1929.

Berkshire District Medical Society

The especial features of the October meeting will be addresses by Dr. George Crile of Cleveland, Dr. Emil Novak of Johns Hopkins, Dr. Willis Campbell of Memphis, Tennessee, and Dr. Thomas Ordway of Albany, N. Y. A complete program will be published later.

HUGH J. DOWNEY, Secretary.

Bristol North District Medical Society

September 21—Fall meeting. Place to be determined later.

April 18, 1929—Spring meeting.

Bristol South District Medical Society

Meetings will be held November 7, 1928, and May 2, 1929. Complete notice will appear later.

Essex North District Medical Society

October, 1928 (Wednesday afternoon)—A joint meeting with Middlesex East and North, and Essex South. Date and place to be announced.

November 1, 1928 (Thursday)—Censors meet at Hotel Bartlett, 95 Main Street, Haverhill (Tel. 3430), at 2 P. M.

January 2, 1929 (Wednesday)—Semi-annual meeting at Haverhill, at 12:30 P. M.

May 1, 1929 (Wednesday)—Annual meeting at Lawrence, at 12:30 P. M.

May 2, 1929 (Thursday)—Censors meet at Hotel Bartlett, 95 Main Street, Haverhill, at 2 P. M. (Tel. 3430.)

Norfolk District Medical Society

Below are the proposed meetings of the Norfolk District Medical Society for the 1928-29 Season. The schedule below will be adhered to as strictly as possible. The carrying out of the proposed plan will, of course, depend upon the acceptances of invitations extended to the speakers. Minor changes may be necessary.

October 30—Pondville Hospital. Dr. Lyman F. Jones, Superintendent. Inspection, 4 P. M.; Business Meeting at 5:30; Papers by the Staff; Collation.

November 21—Boston Medical Library. In combination with Suffolk District and Middlesex East District Societies. Subject, Physiotherapy—Dr. F. B. Granger.

January 29—Roxbury Masonic Temple. Subject, Treatment of Varicose Veins by the Injection Method—Dr. E. E. O'Neil. Dr. Homans will open the discussion.

February 26—Roxbury Masonic Temple. Dr. W. R. Ohler. Subject to be announced. Discussion to be opened by Dr. A. A. Hornor.

March 26—Roxbury Masonic Temple. Subject and speakers to be announced.

May, 1929—Annual meeting program to be announced.

The Censors of the Society meet November 8, 1928, and May 9, 1929, at the Roxbury Masonic Temple, Warren Street, Roxbury, at 4 P. M., for the examination of candidates.

BOOK REVIEWS

The Principles of Ante-Natal and Post-Natal Child Hygiene. By W. F. FELDMAN, M.D., B.S., M.R.C.P. (Lond.) F.R.S. (Edin.) Lond. John Bale, Sons & Danielsson, Ltd.

So far as the reviewer knows, this book, which is a companion volume to "The Principles of Ante-Natal and Post-Natal Child Physiology", is, as the author states, the first of its kind in any language. The subjects dealt with are taken up in a most masterly and comprehensive fashion, and are so comprehensive in their scope that it is difficult to conceive of any phase of child hygiene that has not been touched upon.

It is divided into three parts in Prolegomena, dealing with the history and development of child hygiene, the biometrics of child hygiene, ante-natal and intra-natal mortality, child mortality and maternal mortality; Ante-natal hygiene, considering heredity and environment, the physiology of the foetus and the care of the expectant mother; and Post-natal Hygiene.

The book is scientific and scholarly and yet, particularly in this third part, treats exhaustively with practical considerations.

Pathological Physiology of Internal Diseases. By ALBION W. HEWLETT. 787 pages. D. Appleton & Co., Publishers, New York.

"Pathological Physiology of Internal Diseases" by Hewlett needs no introduction to the physician who is making an earnest effort to explain the clinical phenomena which he meets in his daily work. When Dr. Hewlett died in 1925, the task of revising his book was undertaken by a group of his colleagues. The present, Third Edition, has been brought up to date and presents a careful and conservative viewpoint of functional pathology. All physical signs and symptoms are carefully scrutinized and explained on the basis of the most recent physiological findings. Original investigations are quoted and data is presented in such fashion that the reader may draw his own conclusions or accept the opinion of the authors. There is nothing dogmatic about this book. It is carefully organized, contains 164 illustrations, has an excellent index and large paragraph headings which facilitate quick and easy reference. The book contains as much help for the surgeon as for the internist. Because it so successfully links the laboratory with the clinic it is indispensable to third and fourth year medical students. In the opinion of the reviewer, it is one of the great books of modern medicine and should be in the hands of every earnest physician.

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